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AFTER BUSINESS HOURS

Australia - Future Home of World Culture?

(By John Dexter.)

The views expressed in articles published in this section are those of the contributors and not necessarily those of "The Australasian Manufacturer." They are selected for their interest value, whether controversial or not, and the comments of readers on the subject discussed are always welcomed by the Editor.

A USTRALIAN - BORN world-famed nuclear flasion scientist, Professor Marcus Oliphant, made a highly provocative suggestion on his recent arrival in this country to take up the post of Director of the Research School at the newly-established National University at Canberra. It was to the effect that the British Commonwealth of Nationa could develop socially, economically, scientifically, and defensively in such manner as would set a high example to the rest of the world. Another of Australia's eminent

Another of Australia's eminent sons, Professor Gilbert Murrayone of the world's leading Greek scholars—who, like Professor Oliphant, has won distinction and honour in England, also advanced some short time back the interesting proposition that the younger nations of this Commonwealth. Australia and New Zealand, more particularly his homeland, should become the future home of the world's culture and civilisation.

As all we Australians proudly acclaim, our most significant exports are unquestionably those of the intellectual species—the Oliphants, the Murrays, the Floreys, the Fairleys, and the Rutherfords—the last hailing from New Zealand. These, and other men of their calibre, have left their own country because it could not offer them the opportunities for research, for study, for mingling

with others of their kind, which the older gountries can provide Indeed, in numerous instances they were literally forced abroad to secure appreciation of their work, to have it understood, to have it appraised at its true, value, albeit it seemed of no immediate practical use.

It seems more than probable, however, that the future, even if not the immediate future, may well witness an exodus of the men of outstanding ability from the Old countries to the New.

Already this has happened to a marked degree in the United States which opened wide the doors of its universities and its research centres to the men of science, of learning, and of letters, exiled from Germany under the Hitler regime. "Einstein", as Princeton; Rostotzeff at Harvaci, Thomas Mann, the great enigration of anti-Nazis to the United States—for nearly all the intellectuals were against the Nazis—is making a sort of Renaissance there. Egyptologists go to Breasted at Chicago; students of ancient Greek inscriptions— a thrilling subject, I assure you—go to work with Merrit at Princeton; astronmers run off to look through the great telescope at Mount Vernon."

Yet, a mere generation ago, a famous American, President Eliot, of Harvard University, incensed two continents by a single utterance when he declared: "America is no country for a man of conscience." He meant to imply, of course, that social conditions in Europe were calculated to wound the feelings of men of conscience, while the low-brow standards of America sent into exile in France and Britain such men of culture as Santayana: Pearsail Smith; and the critic's own son. T. S. Eliot, taken of modern poetry and one of the most eloquent exponents of our great Mother tongue.

It would seem, therefore, that what is happening in the United States could well happen within the Australian Commonwealth. None could question the local availability of intellectual material. It is here, here in abund-

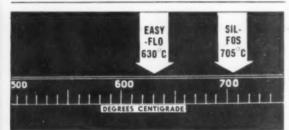
ance. "I should guess," says Professor Gilbert Murray, "that the amount of intellectual ability in Australia is as high as anywhere; but at present it exports itself. But are there not already signs of the turn of the tide? Europe on the whole is an awful place to live in; and for none so awful as for the old cultivated and leisured middle class. In Germany

ured middle class. In Germany and Russia and Poland they were the Russians politely say liquidated which means bumped off And even in the Western off. And even in the Western countries like France and Hol-land, and possibly Britain, the backwash of all this misery and revolution will probably make the men of culture constantly and less happy, less and less wanted by anyone. May it not be that many of them will look for peace and quiet, freedom from fear and freedom from perpetual discouragement, away at the other side of the world, in happy lands beyond the Pacific? To an historian—and history is the real basis of culture Europe is a wonderful continent, and Euro-pean civilisation perhaps the finest that has ever existed. It is, on the whole Roman. It is per-meated through and through by the tradition of the Roman Emthe tradition of the Roman Em-pire, its rule of law, its ideal of world unity, its religion; all of course based on the thought and art of Greece, but achieved in practice by the extraordinary practical civilisation of Rome. I noticed recently a speech by Win-ston Churchill about the possible attainment of a great peaceful unity of Europe, 'such', he said, unity of Europe, 'such', he said,
'as has never been since the days
of the Roman Empire.' Will the
world ever recover that state of
peace and unity? Can Australia
help to provide it?"

There is certainly nothing to prevent her so doing, provided she plays a full and a worthy part in the affairs of nations.

the affairs of nations.
What a grand proposition the Professor puts forward, the proposition which offers this country the promise of the possession of the men responsible for the finest achievements of the human mind and of the human spirit!

The question immediately arises: How is Australia prepared to welcome these men, if and when, they come? First, her welcome



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must be comprehensive in character. It must embrace all the sciences, all the arts, and all the graces of civilisation, old and new. It must by no means be confined to the utilitarian branchesscience and economics. For these branches, whose importance cannot be over-estimated, Australia must, of course, provide the latest must, or course, provide the latest and the best research facilities; the most proficient instructors; universities and laboratories as finely equipped and as expertly staffed as any to be found in the other lands. older lands.

But she must provide more. She must also provide that atmosphere of refinement and culture out of which grow the creative arts-great literature, great drama, great painting, and great sculp-

ture. For these are the arts which give to life an added beauty, an added meaning, and beauty, an a an added joy.

It could well happen that in that greater day, Australia would be the Mecca to which would be the Mecca to which would flock men from all the nations of the earth to gather wisdom from her universities, culture from her environment of prosperity and quiet contentment, and joy from her unsullied blue skies.

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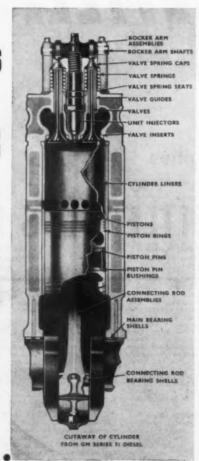
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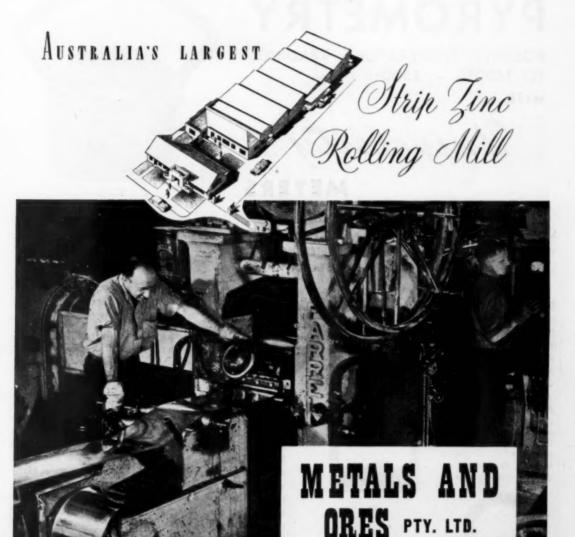


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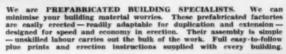
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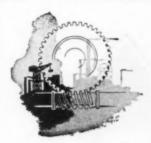


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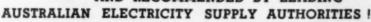
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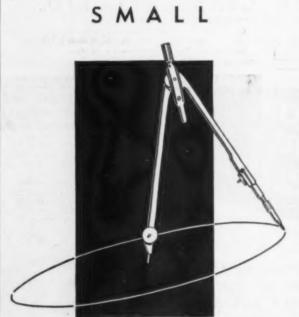




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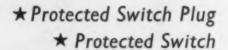
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[Page 12, November 18, 1950.]





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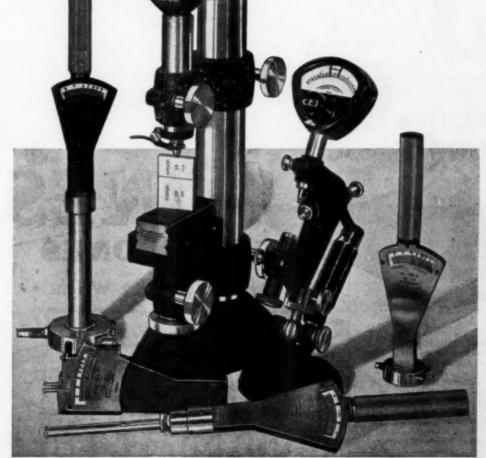
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PAGE FIFTEEN NOVEMBER 18, 1950.



Teamwork for Production

Joint Responsibility Confronting Management and Labour

"I have held preliminary talks with the Minister for Labour, Mr. H. E. Holt, on the possibility of convening a Peace in Industry Conference,"—The Prime Minister, Mr. Menzies, in the House of Representatives recently.

"Trade unions in overseas countries are now beginning to make increased production and the raising of standards of industrial efficiency the prime objective of their activities. This represents a fundamental break-away from deeply-ingrained trade-union notions and traditional conceptions of trade-union policy."—"I.P.A. Review", September/October issue, published by the Institute of Public Affairs, Victoria.

"I associate myself with the call for greater production made by the President of the Australian Council of Trade Unions, Mr. A. E. Monk. It increased production is really wanted, it can be secured by all factors in industry getting together."—Mr. P. J. Clarey (Lab., Vic.) in a recent speech in the House of Representatives at Canberra.

THESE three statements, emanating from Government, from management, and from labour, may be said to give voice to the earnest desire of the Australian people to see their country keeping alertly abreast of the great industrial nations overseas in a set determination to raise production levels, the execution of this determination being made possible by the new approach to the output per man-hour issue which is being adopted by labour in the United Kingdom, the United States, and in other major industrial nations abroad.

The core of this new approach is the recognition of the close interdependability of management and labour and their dual responsibility to raise output to levels which not only spell the continuance of existing high living standards, but which will also raise them to even higher planes.

The "I.P.A. Review's" article, under the caption "Trade Unions and Production", is a concise elucidation of the slowly-but-surely changing viewpoint of unionism abroad to the production issue. "A new and momentous change in the trade-union attitude to production," it declares, "is occurring. It is excellently, and rather dramatically, summed up in the opening paragraphs of a report by a team of British trade unionists who visited the United States late last year to investigate the role of American unions in increasing productivity: British trade unionism, to repeat what almost amounts nowadays to a platitude, is standing on the threshold of a new social, economic, and industrial order—a situation which has been created in part by the trade unions themselves. The way has been long and arduous but mass and hard core unemployment and social insecurity characteristics of social injustice, have, we hope, disappeared for good. But what lies beyond this threshold of Labour movement achievement? By and large, the answer has been found. It is

to seek a rising standard of life for all, achieved through increasing productivity, or output per man-hour. This, then, is the real problem confronting trade unions: to find ways and means of increasing productivity—a problem concerned mainly with industrial policy and action as distinct from the political pressure to achieve full employment and economic stability."

This changed viewpoint is the direct outcome of three main contributing factors. First, a realisation by the trade-union movement that the scope for improving the workers' living standards is now so confined as to be virtually non-existent. For the inescapable logical fact that there remains no prospect of raising living standards through a further sharing-up of available wealth has at last been burned deep into the minds even of Labour politicians and of many union leaders. Second, the worker's erstwhile fear of "working himself out of a job" has been dispelled by to-day's labour shortage. And of no country is this truer than of Australia, with its 117,000 jobs crying out for workers to fill them. And third, the overseas countries hard hit by World War II have been brought to an appreciation of the fact that their economic welfare is inseparably intertwined with their ability and their determination to produce that sufficiency of goods which is synonymous with high living standards.

Hence we find the 1949 Report of the British Trade-Union Congress declaring: "The trade-union movement is participating in, and has everything to gain from encouraging, a national drive to increase efficiency and production." "The unions in Sweden", the "I.P.A. Review" points out, "have taken the unprecedented course of insisting on the provision of fiscal incentives for industry to plough back its profits into improved

THE AUSTRALASIAN MANUFACTURER [Page 16, November 18, 1950.]

equipment. They argued that in this way industry could be made more efficient, and that if improved efficiency resulted in higher profits they would see that their members got their fair share. The unions also supported the widespread application of piecework, which now applies to more than half of all Swedish industry."

In Denmark last year the Government appointed a Joint Production Committee, charging it with the responsibility of promoting industrial efficiency. It has been shown, too, that in the countries behind "the iron curtain" the finding of ways of increasing production is ranked as the major task of unions.

In the United States, that land of mighty industrial achievements, trade-union policy has long been based on a recognition of the fact that high living standards are attainable only through high productivity. In that country the unions, far from opposing the installation of new and better equipment, welcome, nay, demand its installation on the widest possible scale. "American unions," the "I.P.A. Review" reminds us, "do not object to time studies, but through their own trained officials reserve

the right to check the findings of managements. American unions accept the competitive system as the best means of ensuring high standards of efficiency and a rapid pace of industrial progress from which they can benefit."

How scon will Australian unionists take their stand beside unionists overseas in an all-out effort to increase man-hour output?

No time could be more opportune than the present. For the Commonwealth Arbitration Court has declared that the new basic wage is to operate from the first pay period in December. And the only source from which this higher wage can be secured without damage to the economic structure is from higher production—higher production attainable only if and when the Australian Trade-Union Movement, keeping in step with the advanced concepts of fellow unionists abroad, cooperates wholeheartedly with management which, obviously, must discharge its high responsibilities in a manner compatible with their overwhelming importance.

Thus will emerge a unified drive for the achievement of to-day's basic essential of industrial survival—increased output per man-hour.

Pithy Jottings of Industry and Industrialists

W.A. INDUSTRIALIST VISITING EASTERN STATES.

Mr. H. L. Brisbane, chairman and managing director of H. L. Brisbane & Wunderlich Ltd., of Perth, is at present on a business trip to the Eastern States and New Zealand.

I.C.I. EXECUTIVE RETIRES.

Mr. C. G. Hoyt, executive vicepresident of the International Sales Company of Chicago, has retired from the active list. From 1919 to 1934, Mr. Hoyt was managing director of the Australian company and was previously manager of the motor truck department here.

COURTAULDS LET BUILDING CONTRACT.

A contract for the erection of factory buildings at Tomago, near Newcastle, N.S.W., has been let by Courtaulds (Aust.) Ltd. Courtaulds board emphasises

Courtaulde board emphasises that the placing of this contract is in line with the timing forecast in the prospectus and should not be taken to indicate any earlier date of completion of the main building programme.

AUTOMATIC TOTALISATOR'S NEGOTIATIONS WITH THE UNITED STATES.

Mr. A. F. Julius, chairman, announced at the recent annual meeting of Automatic Totalisators Ltd. Sydney, that his company has advanced its negotiations with interests in the United

States, and it is anticipated that definite proposals will be put forward at an early date. "With the object of extending the company's activities abroad, particularly in the United States," he said, "much has been done to explore the scope of the American market."

MONSANTO CHEMICALS TO PRODUCE POLYSTYRENE.

Monsanto Chemicals (Australia) Ltd. announce the completion of their plans for the production of the important plastic, polystyrene, at their Melbourne plant. The scheme, which involves an outlay of some £250,000, has for its objective the conversion of styrene monomer to polystyrene for moulding operations. This plastic is an essential component of refrigerators, motor cars, and a wide range of other industrial products.

Special significance attaches to the fact that at the moment it is available to Australia from dollar sources only. Its local production, accordingly, will mean vital dollar savings.

AUSTRALIAN AND N.Z. MANU-FACTURERS TO EXCHANGE

An interesting happening is planned for April/May of next year. It is the visit of over a hundred New Zealand manufacturers to study industry and technical processes in New South Wales, Victoria, and South Australia. The invitation has been

extended by the Federal Government and the New Zealand industrialists are to make the journey in two chartered planes, leaving the Sister Dominion on April 22nd, and returning on May 12th.

The New Zealand Manufacturers' Association has proposed a visit to their country at a later date by Australian manufacturers.

The idea is an excellent one and should serve to bind still firmer the trade ties already joining the Commonwealth and the Dominion.

SOLID POSITION OF AUSTRALIAN MANUFACTURING INDUSTRIES.

Mr. R. G. Casey, Minister for Marcianal Development, made interesting reference recently to the increasing strength of the Australian manufacturing situation. "Manufacturing industries in Australia which increased rapidly after the war," he said, "are now settling down to a period of healthy consolidation. The total amount of planned industriel accompansion is as great as ever, but a much greater proportion of capital investment is going towards the strengthening and improvement of many of the new industries started since the war. This is a healthy frend, after the postwar boom, that will establish gains on a sound basis."

MODERN INDUSTRIAL ROMANCE.

The story of the 40-year-old Englishman, Mr. Bernard Sunley, may well be described as one of the most intriguing industrial romances of to-day. Leaving school at fourteen to drive a "muck cart", he is at the moment chairman of seventy companies.

He is in Sydney at the present juncture supervising the implementation of the £250,000 expansion programme of the Blackwood-Hodge Organisation which distributes heavy United States earth-moving equipment being used on a number of Australian projects. "My organisation," said Mr. Sunley, "will invest £250,000 in Australia on sales and servicing plant. Our Sydney plant will be at Granville,"

Here is his story in brief. "I started out at 14 without a penny," he tells us. "Through hard work and initiative, and the help of hard-working executives, I have built up one of the largest organisations of its kind in the world. I found out early that employer -employee relationships are of paramount importance if a business is to progress. We have had almost no industrial unrest in our 20 factories, largely due, I believe, to my introduction of incentive systems. Such systems have become a necessity in industry to-day."

GENERAL MOTORS-HOLDENS LTD. ACQUIRE DISCO MANUFACTURING CORPORATION.

General Motors-Holdens Ltd. announce their acquisition of the Disco Manufacturing Corporation Pty. Ltd. The plant will be utilised for the production of "Holden" electrical parts and other automotive lines.

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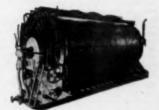
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Rivets for Radio and Electrical Equipment

Manufactured by F. G. S. Products Ptv. Ltd.

Rivets, though small in themselves, play so fundamental a part in the fabrication of so range of products that they rank high in the industrial scheme of They are basic essentials, example, in the manufacture of radio sets, of fans, of irons, and electrical important other

It stands to reason, therefore, they must be manufactured high quality raw materials. high highly specialised equipment must be employed in their pro-duction, and that they must con-form to strict standards of uniformity.

Every working day of the year rivets conforming to these stan-dards are turned out to the tune of a million at the plant of F.G.S. Products Pty. Ltd., cnr. Euston Road and Maddox Street, Alexan-dria, New South Wales.

Here, the latest type equipment produces a ceaseless stream of rivets of various sizes and in various metals. The size range is comprehensive, including as it

Tubular rivets-1/16 in. diam. x l in. to 3/16 in. diam. x l in. Solid rivets—1/32 in. diam.

1/16 in. to 3/16 in., diam. x 1 in.

Bifurcated rivets—7/64 in. diam.

x 3/16 in. to 3/16 in. diam. x 1 in.

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tubular, solid. and hifurested types in all standard sizes, in steel and in non-ferrous metals. All metal used is of the correct hardness and toughn

The fact that FGS rivets are produced on mass production lines obviously spells far-reaching economies, economies which are reflected in their prices to industrialists.

This enterprise, by the way, has recently changed its trading name. a number of years, as readers

of this journal scarcely need be reminded, it has functioned as Frank G. Spurway Fty. Ltd. Trading to-day as F.G.S. Pro-ducts Pty. Ltd., it is extending its activities and planning the production of an even wider range of

Well-organised conducted agencies in the various States and in New Zealand keep buyers in each of the capital cities well posted regarding facturing developments and stocks on hand, the agents being: Vic-W. Bennett, 433 Spencer Street. West Melbourne: Australia: R. C. Woo Chesser Street, Adelaide; Wooflard, 18 Queens H. Hills, 113 Eagle Street, Brisbane; Street, Brisbane; Western Australia: T. W. Egan. 75 King Street, Perth; Tasmania: V. Mac-Donald Brame and Co., 68 Street, Hobart; and New Zealand: J. L. Garrard and Son Ltd., Customhouse Quay, Wellington.

applications. Noted for silence, efficiency, and high starting torque.

Split Phase: Built for continuous duty and constant speed, or special purpose short hour types.

The "Delco" is direct current, of robust construction, with high torque and ample overload capacity. It is available in 32, 100-130, and 200-250 voltages.

The capacitator start motor The capacitator start motor is equipped with the built-in "Ther-motron" overload protection de-vice. This is standard on the British models, but optional on those of Canadian origin.

Every motor carries a .welve months' warranty. Upholding as they do the world-famed name of "Delco", these motors are first for quality and first for effi-

They are distributed throughout the Commonwealth by Industrial and Domestic Equipment Com-pany—a Division of General Motors-Holdens Ltd.-which oper-Motors-Holdens Ltd.—which oper-ate efficiently-conducted agencies in Sydney, Melbourne, Brisbane, and Adelaide. Engineers of the organisation will be pleased to quote for individual types and to advise on the model best calculated to meet specific operating conditions.

S.T.G.'s Rapid Expansion

Opening New Factory Soon

Eighteen years ago S.T.G. Co., Ltd., began Alexandria, Sydney, as manufacturing engineers. Quickly the business grew, and to-day the firm has a busy factory in Bowden Street, with a branch plant for small parts at Brighton-le-Sands.

The firm is expanding along with the general growth of Auntralian industries since the war. Recently it acquired four acres of land at Bonds Road, Punchbowl. Already has completed and equipped its foundry building the new site, and shortly after Christmas the directors expect to make a 10-mile move from the present factory in Alexandria to Punchbowl. The floor space at the new site is 20,000 feet, so that there is plenty of room for fur-ther expansion there. "We are a growing concern. We are a growing concern. We are still growing and there is no reason why we should not keep on growing," say the directors.

The move will be made as soon the machine factory is ready. The firm will put up other work-shops on the site when materials become available.

All S.T.G. products are keenly sought after, both in secondary and primary industries. The three trades with which the company mainly deals, however, are engineering, motor and plumbing. The rapid development of these three trades in Australia has necessi tated the simultaneous expansion of S.T.G. The firm produces a wide range of brass petrol taps

for use on motor-cycles, cars, engines, etc., bronze petrol needle valves, drain taps, grease guns, grease cups, oil lubricators, motor control levers, and plumbers' brassware. S.T.G. bronze globe, needle, chuck and gate valves for steam, gas, air and petrol, rank The firm from 1-in. to 1-in. a very wide range of deep-barrelled plug cocks, bronze gland-packed cocks, gauge cocks, and pressure-relief valves.

One of the firm's special features is the production of the S.T.G. hand-operated highhighpressure grease guns, which provide a fast and clean method of af lubricating machinery, tractors, implements and vehicles. These grease guns are widely used by manufacturers all over Australia. Their rugged, simple construction ensures long, trouble-free service under the most severe usage. guns are attractively finished in cadmium. In the utility type the follower assembly is rigidly tached to the rod and cannot be pushed back into the barrel when the gun is filled with lubricant. Many operators prefer this feature, since the position of the rod indicates the amount of lubricant remaining in the barrel. The guns are made in six models. varying in capacity from 31-oz. to

The firm also makes a complete range of brass grease cups and siphon-feed offers, widely used by

(Turn to page 20.)

"Delco" Fractional H. P. Motors

Distribution by Industrial and Domestic

Equipment Company

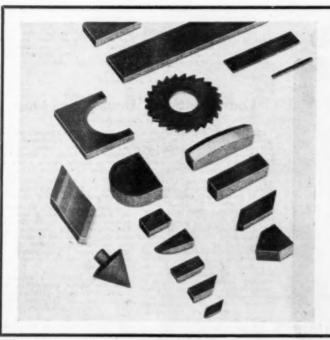
The fractional horse-power electric motor continues to find host of important new uses both in the factory and in the home. This means that it is lifting the heavy burdens not only from the shoulders of the men, but also from the shoulders of the women.

One of the acknowledged leaders in this field is the "Delco" electric motor, which comes forward in the following sizes: 1/6; 1/5; 1/4; 1/3; and ½ h.p. This motor has a wide variety of applications, including lathes;

compressors; refrigerators; bench electric saws: fans; washing machines; ironers; and the like. It is available in the two following types:

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MOFFAT-VIRTUE LIMITED

Engineers, Manufacturors, Machinery Merchanta EPSOM ROAD, ROSEBERY, N.S.W. 'Phone: FF 1201 (9 lines). (Continued from page 18.) the motor trade, and machine tools for industry generally.

It turns out a comprehensive range of plumbers' brassware up to 1 in. This includes all types of brass fittings, such as elbows, sockets, nipples, tees and bushes, tube cocks, union gas cocks and stop cocks in all sizes. Another product is the chrome-plated S.T.G. shower rose, both the fixed and swivel types. There is also a wide range of motor-cycle control levers, clutch, magneto control and trigger levers.

Convector Solves Heating Problems

Rowe Units Assist Industry

Spurred by the fact that correct heating is a valuable adjunct to industry for every purpose, H. Rowe and Coy. Pty. Ltd., manufactures four models of convector heaters.

Three of them are in cabinet form and a feature is that they can be moved from one room to another, or to any other place where there is a power plug available.

The "Rowco" heaters lay claim to being ideal for heating control rooms, waiting rooms, offices electric traction vehicles, drivers' cabins, hospitals—in fact, almost any form of air heating. Gastight models, suitable for heating large areas, such as offices at petrol storage depots, where there are dangerous fumes prohibiting the use of exposed terminals and radiant elements, are also incorporated.

"Rowco" heaters are fitted with specially designed "Bray" fibred elements which operate at black heat. The cabinet remains cool and is so arranged that maintenance troubles are nil. Automatic air circulation is achieved without destroying the oxygen content and penetrates to the farthest corner of the room providing pleasant comfort. Light in weight, they are sturdily built.

The B model heats and circulates the air without a fan. Its makers say it spreads warmth evenly and without "hot spots" over the area to be warmed. Efficient and economical, it can be used in multiple where the area

is large. It is particularly adaptable for control by thermostat. It has an electrical loading of 500, 1,000 or 1,500 watts. It stands 25i inches in height with a width of 26i inches and weighs 27 lbs.

The "W" model has been planned to be attached to a wall without occupying floor space.

It has the "Bray" equipment and noiseless because it has no moving parts, is highly efficient. The heater casing remains cool and all corners are rounded. It has an electrical loading of 750 or 1,000 watts. It is simple to attach to a wall or other convenient place.

The "A" model is a departure from the cabinet type and is designed to fit under work benches, office tables, or anywhere where heat is a desirable adjunct to efficiency in industry.

It can be placed in the cabins of delivery trucks, tractors, mobile cranes and other vehicles. Where there are a number of employees standing at packing or assembly lines, the "A" model, fitted under the bench, is an ideal asset to any business, where comfort of employees is considered.

The firm provides a technical advisory service to industry.

H. Rowe & Co. Pty. Ltd. have offices at 136 Elizabeth Street, Sydney; Flinders Court, off 15 Elizabeth Street, Melbourne; 121-123 Pirie Street, Melbourne; 121-128 Eagle Street, Brisbane, with agents in Perth and Hobart.

Backstand Idler Grinder

Unit Has Features of Wide Appeal

The Backstand idler motorised grinding machine has a number of features that should have a wide appeal.

Its new technique of abrasive belt finishing is claimed to give added superiority in that it gives a faster and more uniform cut, with a better finish and a saving of a large stock of set-up wheels and their maintenance. It is also claimed the machine has four to eight times the production life of the average set-up wheel, with production costs reduced to a fraction of that.

The manufacturers cling strongly to the claim that the Backstand method of grinding and finishing results in a sharper coating; a cooler cutting and cushioned grind.

ioned grind.

In respect of the sharper coating, each grain on the belt is anchored separately. On the setup wheels grains are built one on the other, and, being securely bonded, gives quick shredding and storm of the storm of the setup secure.

slower cutting.

Cooler cutting is achieved from the circumference of the set-up wheel, with an average Backstand beit of 14 ft. Result, it is claimed, is about four times the number of cutting points and about the same distance of travel. The contact area offered by a hard non-uniform set-up wheel coating to the greater contact area is made possible by the resiliency of the contact wheel.

A conversion from the orthodox et-up wheel to a coated abrasive belt can easily step up production with fine and uniform finishes. The makers claim increased pro-The makers claim increased pro-duction life of the material can be obtained as well as a consid-erably increased production rate per hour. In many cases the number of operations can be reduced.

The unit is substantially structed and is so arranged it can be assembled for either right or be assembled for either right of left hand operations. Adjust-ments are provided for tensioning the belt and for lateral and radial adjustments for aligning the belt on the contact wheel. The idler pulley is machined all over for and mounted is shielded hall races.

Distributors of the unit are McPherson's Ltd., of 546-566 Col-lins Street, Melbourne; 280 Kent Street, Sydney; 116 Waymouth Street, Adelaide; and 532 Murray Street, Perth.

Close Control Infra-Red Heating

Applied glass technology has led to a new heating method. In ex-perimental and pilot-plant work of many kinds, such agents as the bunsen burner, and water, oil, or sand baths prove inadequate. They are hard to control accurately, they are not unfailingly safe with inflammable liquids, they they may cause "bumping", and the uneven distribution of the heat they produce often damages the heated recipient as the liquid lever falls.

A method, freed of these shortcomings, has been developed after two years intensive work. It consists, basically, of a solid, yet flexible heating jacket, powered by electrically generated infra-red radiation, and with temperature control accurate, if necessary, to 0.1 deg. C.

"Stabilag" jacketing utilises the exceptional insulating properties of fibre glass cloth. An outer of fibre glass cloth. An outer layer of this material has stitched to it a resistance wire so finely pitched that there is virtually no gradient from one turn to the next. Between two further layers of glass cloth lies the heating ele-ment, with its built-in thermo-static control. Each jacket is tailored and moulded to shape by a special process, and the glass cloth's flexibility ensures a snug snug final fit. Solidity is provided by an outer cover of aluminium or other metal.

The method is remarkably versatile. It can be used with 1- or 3-phase A.C. or D.C. Though originally conceived for round vessels, it has already been adapted to glassware of peculiar shape such as funnels and bottles.

Its use is already envisaged for fractionating and distillation col-umns, pressure and vacuum vessels, rollers in the paper industry, dye pots, food conveyors, paint drying on car bodies, and textile drying—to name only a few appli-cations far removed from the laboratory flask and beaker. [2553].



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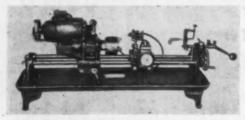


YOU WANT TO KNOW . . . and the editors will gladly tell you . . . more about the inventions, materials, and processes mentioned on this page. Write to Box 1687, G.P.O., SYDNEY, enclosing a stamped, self-addressed envelope.

Auto Electrician's Lathe

A British company have developed the universal motorized lathe cliustrated, specially for auto-electricians. This machine will carry out re-bushing, turning, drilling and grinding up to hin. dia., and is suitable for truing

stock. Worknead is driven through phosphor bronze gearing. Tool slide is adjusted along the bed slides by means of a lead-screw operated from a hand-wheel mountd on the tailstock support. Toolpost will swivel



Universal motorized lathe has a capacity for re-bushing, furning, drilling, grinding up to in. dia., and admits 20 in. between centres.

and undercutting

Machine will admit 20 in. between centres and has a swing of 28 in. radius over the bar slides. Drive is from a 16 h.p. singlephase 3,500 r.p.m. motor and a 3 in. dia. grinding wheel is fitted at the rear end of the head-3 in. at the

through 180 deg. Slide also sup-ports a flexible drive attachment for valve grinding operations. Other equipment includes a draw bar for collets, a in. bore collet, a three-jaw self centring chuck, a three-jaw drill chuck, an indexing attachment for mica undercutting, and a sphere chuck for the tailstock. [2839].

Production of Dies on Contour Former

contour former developed overseas, primarily for use in the aircraft industry during the war, is now stated to be finding wide application in a variety of other industries. The machine is particularly suitable for operation in conjunction with a press brake, the latter being used to produce straight members of various cross sections, which are then curved on the contour former to the shapes required-for example, for structural parts for railway coaches.

A useful feature of the machine is that it can be used to produce the accurate forming elements of its own dies. The original cost of the dies is thus considerably reduced, since it is possible to reduced, since it eliminate the eliminate the expensive die-finishing operations often required with other methods. While a form die of the type required is less expensive than the matched dies

needed for conventional press operations, its cost is usually an important factor when dealing with relatively small batches of with relatively small oatches or large particu-larly when working with stain-less and other alloy steels, since the amount of spring back in the work is an incalculable factor de-pending on the shape of the cross ection and the nature of the material

If the form die is machined to the finished contour, the work produced is invariably only approximately of the required shape and this necessitates additional work on the die, by trial methods, until the component is produced to the required degree of accuracy.
This additional work often costs
more than the production of the original die.

To overcome the difficulty, form die has been developed for use on the contour former which consists of two essential parts. A welded mounting block, oxygen-cut along the top edge to aproximately the desired contour of the work, is bolted to the ma-chine table, and a second mem-ber, in the form of a steel bar, which is curved to the exact final die contour required. This secdie contour required. This sec-ond piece is made from a straight steel bar, which is first planed along one side to conform to the shape of the inside cross section the workpiece, and then



Contour former with die mount-ing block in position on the re-volving table, and a straight bar, of required cross-section in place ready for forming.

wrapped around the curved edge of the mounting block by opera-tion of the machine itself.

When formed, the planed bar is When formed, the pinned that it can be fastened to the mounting block in such a manner that it can be sprung in or out, by the use of screws or wedges, so as to compensate for spring back in the workpiece. [2633].

Improved Plating Barrel

Design engineering has improved barrel plating efficiency.
The revolving horizontal barrel used in electro-plating small objects, is mechanically effective in exposing their entire surface area to the action of the electrolyte. Chemically, it has one disadvantage: it causes impoverishment of the solution by failure to circulate it positively during the plat-

ing operation.
A barrel co barrel combining mechanical agitation with positive circulation has been developed and is now in production. This result is achieved without any addition to normal running costs; the plating solution

is circulated by the action of the revolving barrel.

The barrel consists of an octa-gonal vessel, through the centre of which runs the driving shaft. The eight sides consist, as usual. of plates with numerous small perforations. The distinguishing feature is at the barrel's ends. Each is constructed into a series of eight compartments, the shape of thick truncated triangles. The solution enters through a rectangular opening on the outer surface of the barrel. and is discharged forcibly on to the object, being plated through a circular outlet on the inside.

As a result, the barrel, when in operation, collects and discharges up to 1 gallon (4.5 1) of solution per revolution. A normal working speed of 10-12 revolutions per minute means that between 600 and 700 g. (2.700 1 and 3100 1) are circulated per hour. [2604].

Hot Air Sets Nylon on Pin Tenter

A new hot-air nylon-setting unit which uses a pin tenter has been developed. The heat-setting machine is built around a pin tenter which has been specially modified to handle nylon fabric. An automatic selvage uncurier, used in



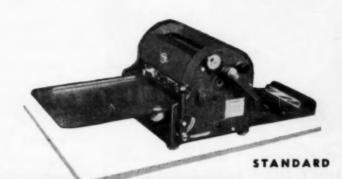
A selvage-uncurling device built into the overfeed device on the pin tenter ensures that curl is taken out of the fabric before the fabric enters the pins.

connection with the usual overfeeding device, is said to ensure that knitted fabrics can be handled as efficiently as woven, fabrics. The selvage uncurier unrolls selvages completely as the fabric is feed to the pins.

A special insulated housing permits use of air temperatures between 460 and 450 deg. F. Length of the housing is 20 ft. The temperature is obtained by gas burners. The hot air, including the products of combustion, is circulated by fans and delivered to the cloth through slots at the top and bottom in a manner similar to the heating of an ordinary tenter. The heating unit is said to be exceptionally leak-proof and to have good insulation. Electrical heating may be used in place of gas.

Special rail linings are used to withstand the high temperatures and expansion.

Tenter rails are arranged with a separate width adjustment at each screw so they can accommodate any cloth width changes which may occur during setting.



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Fabrics are cooled to at least 150 deg. F., before they are removed from the tenter pins. Most fabrics cool well below this point while on the last open bay of the tenter; but cooling fans can be installed to ensure proper cooling of heavier fabrics. Nylon fabrics which have been handled successfully on the setting machine are plain warp-knit, fancy tricot knit, lace, voiles, ninons, and parachute-type fabrics. [2642].

Matchplate Frames for Loose Pattern Work

A new development designed to increase foundry output involves that use of production pattern equipment in the form of interfitting matchplates. The product consists of interchangeable matchplate sectional frames of cast aluminium with parallel sides and ends. The frames may include longitudinal and transverse dividers. or may be used without dividers to hold a full size matchplate. This sectional frame is shown dismantled in Fig. 1.

Interior of the frame is tongued and grooved to ensure rigid and tight interfitting complemental plustic matchplate sections of which there may be one, two or more (depending upon size), as shown in Figs. 2 and 3. To enable easy insertion and removal of these plastic matchplate sections, the frame is constructed sectionally and assembled with screws as shown in Fig. 1. Longitudinal or transverse divider bars are used to ensure different arrangements and combinations of sections.

Different types of sectional plastic matchplates can be inserted into the frame. These may involve quarter sections, longitudinal half sections, transverse half sections, full sized matchplates or a combination of these different sections. Less than one minute is required to make insertion or removals or substitutions to provide different combinations.

Plastic or other composition matchplates are said to offer durability and smoothness of surface and resistance to water, oils, acids and sand abrasion. Brass processing frames, adjustable to quarter, half and full sized sections, have also been developed for use by the plastic pattern matchplate maker in casting these unframed sectional or full size



Fig. 1. Aluminium sectional matchplate retainer frame with component parts disassembled Fig. 2. Frame with transverse divider and two matchplate half sections being assembled. Fig. 3. This frame with longitudinal divider accommodates two quarter and one half sections.

plastic matchplates. With these processing frames the patternmaker is able to cast plastic pat-(Turn to page 26.)

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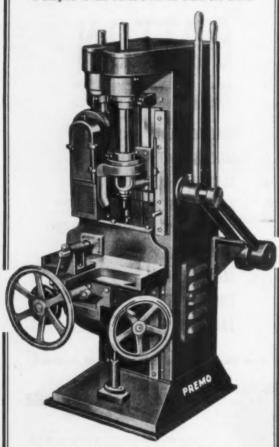
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terns which are complemental in size to the frame described here. One of the advantages of the frame is, that the plastic matchplate does not adhere to it, thereby reducing stress and strain and consequently eliminating cracking. The frame can be used for all matchplates specially made to be interfitting and complemen-tal to each other and the frame.

requires user frame for the quarter and longitudinal half section, and one for the transverse half section. This equipment, which is made for the standard 12 x 18 flask or for any special flask sizes desired, adapted to quantity production of a wide variety of loose pattern work. [2631].

High-Speed Portable Router

Electrical engineering combined with light metals bring increased efficiency to woodworking. Num moulding, carving, dovetailing, fluting, to name only a few-are carried out by routing machines. Though highly efficient, they have Though highly efficient, they have some disadvantages: the equipment is bulky (it may weigh up to 10 tons), and consequently expensive; it is static, so that the job must be brought to the machine. chine.

A portable router, which enables the machine to be brought to the job, has now been produced after years of research. It weighs only 17 lbs., yet, either singly or with attachments, is said to perform countless duties extremely well.

countiess duties extremely well.

One important reason for its
lightness is its electric motor.

This is a high-speed model, working at 20,000 r.p.m., which gives
high output for low weight. The

other factor is the use of a light aluminium alloy instead of the conventional heavier, but not stronger, steel.

The machine embodies several refinements. For instance, it runs in grease packed ball bearings, requiring no upkeep. The motor is adequately cooled by forced air circulation. The spindle of special alloy steel, holds the cutter by means of collets.

Much attention has been paid to ease of working. Two large, comfortable handles assure per-fect control, particularly as the centre of gravity is kept very low. With the hands still on the handles, the starting switch can be put on or off, and the thumb levers reached which lock or unclamp the machine for cutter adjustment. This is done by turning a very large dome nut, turning a very large dome nut. one turn of which moves the cut-ter .0625 in. vertically. [2637].

Pneumatic Hedge Cutter

balanced combination of metals has produced a new hedge cutter. In accordance with the latest trends in horticultural equipment, the device is mechan-Mechanisation, however. may replace old problems with new: in a cutting instrument, the time saved by speedy work may be lost by the need for frequent sharpening which the very speed

No such disadvantages are said to be present in the new cutter. The main component, the blade, is made from a special alloy, in which steel's normal strength is reinforced by the presence of nic-kel and chrome, and by a tough-ening process, too. Sharpening is thus reduced.

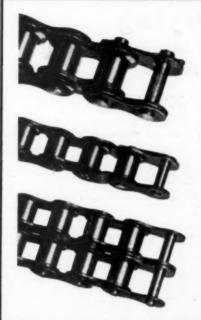
Other features are designed to lessen worker fatigue, and to assure maximum durability. The

cutter is fabricated from a Duralumin aluminium alloy. This of itself confers lightness, and corrosion-resistance. The latter characteristic is enhanced by anodising and polishing. I The gripe, and are adjustable for varyrequirements.

The cutter weighs less than 3 lb. It runs on compressed air, at a working pressure of 50-80 lb./sq. in. It is supplied complete with an oil atomiser, a toolkit, and a

30 ft. airline hose.

In practical tests, the device has proved itself both speedy and has proved itself both speedy and conomical. In one hour it cuts 1,000 sq. ft. of hedge, in a swathe 15 in. wide. The end gap severs stems up to .5 in. in diameter. Other applications include the cutting of long grass, brambles, bracken, and undergrowth in general. [2638].



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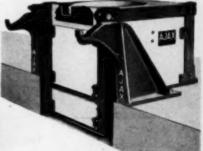
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Modern Wool Drying

Wessberg & Tulander Pty. Ltd. Introduce Successful Design in Triple-Deck Machine

At The Border Wool Co., Albury, a new wool dryer of unusual and highly efficient design is being installed at the present time. It is the fourth of its kind; others are operating to capacity for Sydney Woollen Mills Pty. Ltd., Dundas Woollen Mills Pty. Ltd. and Botany Wools (Aust.) Pty. Ltd., all of New South Wales.

This week we were permitted to investigate this machine which is proving such an effective link between primary and secondary industries, obtaining details of design and production capacity during an interview with Wessberg & Tulander Pty. Ltd., manufacturers of this modern equipment.

EXPRESSED in the simplest terms, the drying of wool is effected after it leaves the scouring bowls by machinery which spreads it in an even layer and blows warmed air through it as it passes on a horizontal plane to the point of ejection.

A major consideration in the design of practical, efficient dryers is that the size of the machine must be controlled; the floor space occupied by a single-deck dryer with a capacity of, say, 1,000 bis of dried wool per hour is considerable, although off-set, where space limitation is not a deciding factor, by the undoubted simplicity and efficiency of the design.

To reduce the amount of floor space required by setting the conveyor in three decks was an obvious design development; and yet while many of the triple-deck machines available to-day are admirably compact, they still leave something to be desired in capacity and efficiency. The reason for this is not difficult to trace. In the single-deck machines, sir is blown through the moving bed of wool. In triple-deck machines, apparently because of design difficulties and because of the excessive height which would be required for a

simple tripling of the single-deck layout, air is blown across the wool or at best effecting only uncertain penetration of the moving hed.

These difficulties have been overcome by Wessberg & Tulander Pty. Ltd., and the wool dryers produced by them are thought to have outstanding design features not available in any other triple-deck machine. Floor space if only 26 ft. 3 in. by 9ft. 6 in. is occupied by a Wessberg & Tulander machine with a capacity of 1,000 lbs. of dried wool per hour, and the height of the dryer is only 12 feet!

"The operating principle of our machines is similar to that followed by leading overseas manu-

facturers," explained Mr. F. W. Keep, a director of the firm, "but whereas with them the principle of blowing air through the wool has been limited to single-deck types, we have obtained single-deck efficiency in our triple-deck machines by what we think is a unique method of utilizing multi-axial flow type fans mounted on a common shaft at the side of the machine."

"This entirely new type of wool dryer was evolved and the design prepared after making drying tests with different types of wool under varying conditions, involving depths of wool bed and temperatures."

"We manufacture both singledeck and triple-deck machines. They are similar in so much, that conveyors carry the wool through the dryer in horizontal planes, but the triple-deck machine has been designed to fit into the minimum factory area. When plenty of space is available, the single-deck machine can be used, but the only advantage of this type now, is that all parts of the dryer are more readily accessible from ground level."

The high efficiency of these dryers, as mentioned before, is due to the drying principle of blowing high velocity air through the moving bed of wool. The even temperature obtained across the dryer, and the low cost of drying, which averages 1.8 lb. of steam per lb. of moisture evaporated, is entirely due to the system of heated air circulation which is the most scientific sitainable and in accordance with the correct theory of drying.

In the Wessberg & Tulander system of drying, cool entering air is applied to the dry leaving wool, and the hot, moist air as it leaves the dryer is in contact with the wet entering wool. This principle maintains balanced, economical drying with improved handle, lustre and uniformity. The air circulation is down-

The air circulation is downblast and counter-flow to the travel of the wool. Fresh air is admitted at the dry end of the unit



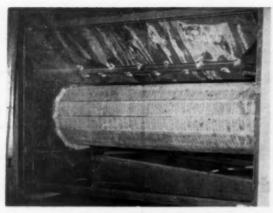
General view of triple-deck "Hurricane" wool dryer.



Motor drive and fan shaft



Driving mechanism, showing variable speedgear,



Discharge end of lower conveyor.

and cools the material just before emerging from the dryer, and at the same time the fresh air is heated up, thus increasing the operating efficiency. Operating temperature is 200 deg. F. at the wet end, 180 deg. F. at the finishing end.

Circulating fans (15 of them in the 1,000 lb. capacity machine) are distributed evenly throughout the length of the dryer. The fans are of the axial flow type, and are driven by direct coupled motors. The fresh air is admitted to the dryer by means of a fresh air fan and the wet air is exhausted by means of a separate exhaust fan.

The heating equipment which is arranged in two zones is complete with pneumatically operated automatic temperature controllers, disphragm operated steam valves, steam strainers and steam traps. Air supply at a pressure of 15 lbs. per sq. in. is required for the operation of the pneumatic temperature controllers.

The dryer framework is constructed of machine folded members, each section being a unit



Pneumatic discharge hopper.

by itself. Additional sections can be added easily at any time it is required to increase production. The dryer framework is completely enclosed by insulated panels made up of siagwool insulation, enclosed in heavy gauge steel casings. All panels are fitted with an effective air seal, where they join the framework and hinged for periodical inspection and cleaning. The ease with which these dryers can be cleaned is a major feature, reducing as ft does the risk of fite.

The upper deck consists of perforated steel plates carried on heavy roller chains running on rigid steel tracks. Wool guards on the apron and deflecting guards stached to the side of the dryer prevent the wool from overflowing the aprons. The middle and lower decks are of similar construction.

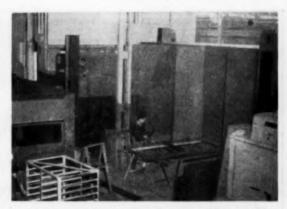
All of the perforated apron plates are specially designed to prevent pinching the wool between plates. Instead of the usual hinge joint in which wool can pack, and affect operation, each plate has a half-round section bearing on a tube across the full width.

The conveyors are driven by variable speed mechanism. Each conveyor deck has independent spring-loaded "take-ups."

Drive is by three 1 H.P.-1,440-3-50-415 and three 7.5 H.P.-1,440-3 electric motors. All bearings are modern design, anti-friction type, with provision for pressure gun lubrication.

Heavy duty seamless steel pipe with extended surface steel fins forms the steam heaters, arranged in two zones for operation with constant steam pressure of 80 lbs per sq. inch at the rate of 600 lbs. of steam per hour.

Wessberg & Tulander Pty. Ltd. have added to the versatility of their wool dryers with the design and manufacture of supplementary equipment which is kept to the high standard of W. & T. production. There is a pneumatic feeding unit to convey the dried



Several big units, including the wool dryer discussed in this article, in course of construction in the W. & T. fabricating shop.

wool to the storage bin. In this system the wool is introduced into the discharge line by means of an air injector and venturi throat, and is conveyed to the separator located above the storage bin. This method of conveying the wool is claimed to be much superior to the blow-through system whereby the wool is fed into a hopper in the suction pipe and is then carried on the air stream through the fan, where injury is caused to the fibres of the wool. If a feeding unit is specified with an order for a Wessberg & Tulander dryer it is built into the discharge end of the machine.

Usual practice has been to use a wool drying machine and a baking machine in series for carbonising acid wool. The new "Hurricane" dryer can combine these processes and wool is dried and baked simultaneously in the same machine. One advantage of drying and baking in the same machine is the saving of driving mechanism and loading elevator as compared with two separate machines.

The top conveyor is constructed of stainless steel to handle the wet acid wool during the drying stage, and the second and third conveyors where the baking process takes place, are made from mild steel.

Australian industry is the richer with the availability of Wessberg & Tulander complete finishing systems for chemical degreesing, rust-profing, painting, baking; the drying of chemicals, textiles, tobacco, ceneers, timber, ceramics, leather, fur, refractories, soap, pulp board, food products, and continuous sheet materials; the baking of bread, blacuits and cores; and the enamelling of car bodies, refrigerators, etc.

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86% of Wessberg & Tulander equipment involves the use of air recirculation, and the company found it necessary to design and develop their own range of fans, some of which are shown above.



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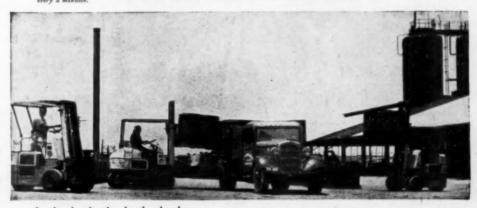
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(Turn to page 34.)

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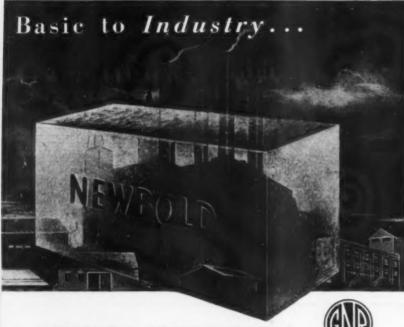
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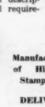
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This Inquiry Service is for the use of readers of "The Australasian Manufacturer" who wish to trace suppliers of Plant, Equipment and Materials, and for particulars of agencies offered. Address your inquiry to the Inquiry Department, and give the fullest possible particulars to enable us to put you in touch will the best sources of supply. InCLUDE A STAMPED SELF-ADDRESSED ENVELOPE WITH YOUR INQUIRY. It is essential that telephone Inquiries be confirmed by letter. No charge is made for Inquiry Services, but normal advertising rates will be charged if agencies are sought by manufacturers' representatives or if goods are offered for sale. For the benefit of new subscribers, inquiries will be published in two or more consecutive issues.

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WHEN REPLYING to an Inquiry, please quote the Reference Number and send your reply to the Inquiry Department, "The Australasian Manufacturer," 18 Bond Street, Sydney. INCLUDE A PLAIN, STAMPED ENVELOPE so that we can forward your reply to the Inquirer.

CRINOLINE (SPRING) STEEL FOR SALE: Brisbane firm has available 19 coils each weighing approximately 2 cwt. of 4 in. wide 24 gauge Crinoline Steel Strip, rolled by one of the best known English manufacturers, for immediate delivery. For further information reply to Ref. 8317. e/o "The Australasian Manufacturer."

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POPE INDUSTRIES' CHAIRMAN REVIEWS PRODUCTS.

SILVER ANNIVERSARY OF COMPANY.

Totally enclosed electric motors of unique design and value were now in steady production and being regularly marketed by the company, said Mr. S. Barton Pope, chairman of Pope Industries Ltd., at the annual meeting of the company in Adelaide recently.

cently.

Mr. Pope added:—"We anticipate an increasing volume of production from this section of our activities. The fact that electrical generating capacity of Australia is about to be doubled in the years ahead should ensure a steadily expanding market for these products. The fact that we were able to design and produce such high grade machines, involving the use of quite mew technique and with features of performance, manufacture and design unique on the market bears tribute to the designing and manufacturing skill of our organisation.

"As has been previously announced, we will shortly be marketing an electric washing machine. Elaborate tooling has been necessary for this product but is now complete and ready for production. The prototype has been subject to rigorous tests, and we anticipate our products being on the market within the next few weeks.

"A very large unsatisfied market exists for this article. Orders have already been booked to ensure the sale of the production planned and of the complete success of this ventuse. Specially designed electric motors for this project have been completely tooled and are at the moment in production. A high level of output is in contemplation, although naturally it will take some time to reach its neak.

"While it would be impossible to sustain permanently the tempo on development of the last 12 months, our development engineers are at present busy both on the creation of new allied lines and on the re-development of some of our older production. It is of interest to note that products developed since the war should represent about 75 per cent. of the turnover value in the current year.

"During the year reviewed, we marketed our lawn mowers on an ever-increasing scale and introduced to the market the new model electric lawn mower, which has proved a striking success. Many thousands of these are already in use in Australia.

menty thousands or these are already in use in Australia.

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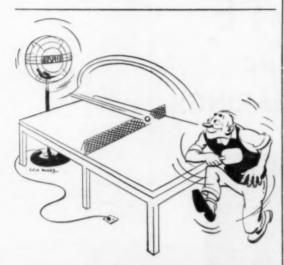
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"A Silver Anniversary Brochure has been prepared, traversing the history of the company from its earliest days and, while a copy of it will shortly be forwarded to the shareholders and to the trade, it has been primarily dedicated to the employees without whose loyal efforts our company could not have been built to the position of standing that it to-day enjoys."

PACKAGING IN PRODUC-TION AND SELLING.

At the September meeting of the S.A. Division of the Food Technology Association, the factory manager of D. & J. Fowler Ltd., Mr. R. E. A. Dixon, spoke on "Packaging in Production and Selling."

The keynote of Mr. Dixon's talk was, that "The best package is that which sells the most goods." This axiomatic statement can be further illustrated by adding that it is a simple matter to become wholesalers of packaged material and not sellers of goods.

The first objective of a package is to sell the goods, the second objective is that the package must protect the goods, added Mr. Dixon. There are three factors of importance in designing the package, keeping in mind also the two main objectives, and they are:—(a) Product protection; (b) Product appeal; (c) Re-use appeal.

Colour, too, has necessarily a leading part to play in the creation of a design, but it is not essential to use many colours to achieve a good package with sales appeal. To support this contention, two well-known brands of toothpaste were shown, and these examples showed the attractive use to which only two colours could be put.

To illustrate his remarks during the course of the lecture, Mr. Dixon exhibited a wide range of packages in all classes of material.

The use of colour in various strengths was ably demonstrated by means of pictorial charts and actual examples. Further graphs outlined the points raised in regard to the study of the effect that humidity and condensation have upon the product.

These factors, emphasised Mr. Dixon, must be investigated if the package is to reach the potential market in seed condition

market in good condition.
Further items of importance were, that checks must be made of the trademarks and the food and drug regulations of the State or country in which the manufacturer wishes to sell.



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In conclusion, Mr. Dixon pointed out that knowing what the parti-cular problem is in regard to packaging, will take one to the aswer. If full and sufficient knowledge of the problem is not

knowledge of the problem is not obtained then there is more like-lihood of running into trouble. The screening of two films at the end of the address, mutually assisted in emphasising the highlights of the speaker's subject-

The first, "Food for Thought", showed convincingly the brilliance of modern packaging design and illustrated gramatically the vast superiority of the modern supermarket over the days of the "cracker-barrel" store and the at-tendant disorder and unsanitary conditions under which goods were sold.

The second film dealt with the re-designing of labels, with impor-tant s.ress being given to the bold use of colour, the legibility of wording and the careful atten-tion given to legal requirements.

Supper, together with informal discussions on the evening's programme, brought the occasion to a most successful conclusion.

MANUFACTURE OF DIESEL

At the annual meeting of Clyde Industries Ltd. in Sydney re-Purves) said that orders for locomotives were held from the Commonwealth and Victorian railand further orders were pending.

Total orders in the engineering June section at £6,000,000

Though at first many of the components for diesel locomotives would be imported from the United States, it was was planned to ocal manufacture quickly as possible.

AUSTRALIAN NEWSPRINT PRODUCTION RESULTS.

Australian Newsprint Mills Ltd. hopes to make a test run of its hopes to make a test run of its new paper-making machine be-fore the end of this month, states the managing director (Mr. S. L. Kessel) in the annual report. When this and the first machine

will be in joint production cannot vet be stated.

Output of 30,472 tons of news-rint (previous 30,734 tons) to une 30 was a creditable performprint June 30 ance.

KITCHENWARE CO. CONVERTS.

The Strong-lite group of com panies, Sellers Pty. Ltd., and Ani-mart Pty. Ltd. has converted to a public company under the name of Animart Industries Ltd.

The two proprietaries are well-known manufacturers of aluminium cooking utensils and kitchenware, and plastic ware, under the trade name of Strong-lite.



Specialists in the production of

The R-O-K 'line' of modern single and double action Presses, has been completed by the installation of two British "Clearing" 750 Ton Presses. Designed for large and medium deep drawn pressings, these powerful machines have a Bed Area of 108 x 66 inches, the stroke of Slide is 20 inches, and stroke of Cushion

If you are planning a new product, or the improvement of your present product, and you need PRECISION pressed components
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R-O-K have the "know-how" and the Plant to design Tools and PRECISION-press components in all metals, and can handle the job from order stage to finished product.

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TASMANIAN PRODUCTION OF MUREX WELDING EQUIP-MENT.

The Board of Murex Limited, Rainham, Essex, England, advise that in conjunction with Australian Associates they have participated in the formation of a new company, known as Murex (A/asia.) Pty. Ltd.

The Company has been formed primarily for the manufacture and sale of Murex are welding electrodes and equipment, and will employ the most modern electrode manufacturing plant and techniques as developed and used by Murex Welding Processes Limited after many years' experience of the electrode industry. The full resources of the extensive Murex research organisation in England will be available to assist future development of the company.

The Head Office of the new

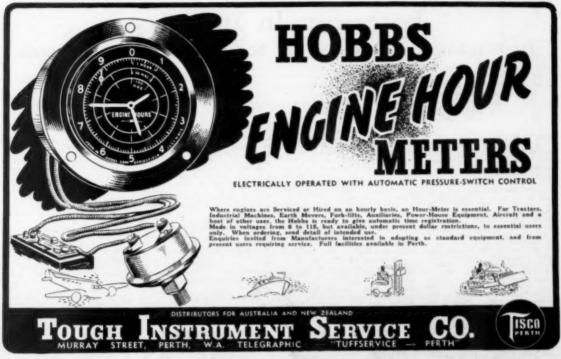
The Head Office of the new company with a modern factory and Research Department is situated at Derwent Park, Hobart, Tasmania. Branch offices are established in all Australian States' Capitals and will be extended later to New Zealand.

The Board of Directors of Murex (A/asia.) Pty. Ltd. consists of Messrs. Francis H. Foster, C. P. Flockhart and D. E. Hopkins. The General Manager of the Company is Mr. W. T. Bennett

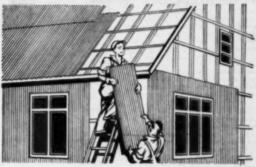
The General Manager of the Company is Mr. W. T. Bennett.
Mr. E. J. Clarke, Director and Development Engineer of Murex Welding Processes Ltd. has already arrived in Tasmania to advise on the installation and operation of the new manufacturing plant.

CHEMICAL INDUSTRIES' EXPOSITION.

The Chemical Industries' Exposition will be held at Sydney Town Hall, 8th-19th December, 1950, under the auspices of The Royal Australian Chemical Institute. Swift & Company Limited, will welcome visitors to their stand—No. 11, Upper Hall, where they will be pleased to discuss matters of interest to industrialists.



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Corrugated Aluminium Building Sheets have many advantages over other roofing and siding materials. The lightness of the metal enables easier handling, with a considerable saving in trans-

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26 in. with nine 2\(\) in. corrugations.
31 in. with eleven 2\(\) in. corrugations.

6, 7, 8, 9, 10, 11 and 12 ft. Lengths:

Thicknesses: 20, 22, 23, 24 and 26 Imperial Standard Wire Gauge

portation and erection costs. It is highly resistant to corrosion, and reflects a high percentage of all radiant heat. Painting is not necessary, and no special maintenance is required.

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Porcelain In Industry

Its Manufacture and Uses are Based on Extensive Research

Before the middle of the nineteenth century the word porcelain would bring to mind the lovely table-ware and ornaments produced first by the Chinese, which inspired the European potters to great and eventually successful efforts to make material of equal merit.

The industrial use of electricity in the latter part of that century brought with it the demand for a safe and efficient insulating material. Porcelain was the obvious choice.

PORCELAIN was chosen because it had two vital characteristics not possessed by organic material. Firstly, it could be made impervious to moisture and therefore its insulating properties were not affected by continuous exposure to weather. Secondly, because of its inorganic and refractory nature, it was not easily affected by electric arcs and discharges which would destroy or render unfit for service many other materials. These properties rendered it particularly suitable for use for both outdoor and indoor insulation. Another most useful attribute is that porcelain manufacturing technique permits a wide range of production as regards size and shape, thus meeting the full requirements of the electrical industry from the smallest to the largest pleces.

Since the early days of elec-trical development, demands have increasingly severe, the use of higher i become volving the use of higher and higher voltages and more severe mechanical loads, and a greater variety of climatic and industrial ons have had to be compositions Porcelain which were satisfactory for the early re nents were subsequently inadequate as the demands quirements of technical performance creased, and consequently consequently enormous variety of work had to be done by electrical and ceramic engineers in the production of materials to meet the more exacting conditions

SCOPE FOR RESEARCH.

Much research work has been done with the object of producing materials of greater toughness and lower thermal expansion, and great improvements have been achieved in both these characteriatics. The field open to the research worker is wide, says a correspondent of "The Times Review of Industry", including as it does a great number of minerals of the clay, quartz. and felspar type, clays in particular being complex in structure and subject to many varieties of form and composition in different deposits. Britain is fortunate in possessing some of the finest clay beds in the world. With such a complex field of investigation, progress is bound to be slow, but the problem is being continuously attailed and results accordingly improved.

Besides the composition of the raw paste, its physical condition is of great importance, and a modern development in this direction comprises a machine which finely shreds the plastic body, under vacuum, and then reconsolidates it, finally extruding a continuous column of air-free material, which is found to be much
more stable and consistent in behaviour than the same body which
has not been subjected to this
de-airing treatment.

Side by side with the development of the porcelain body comes the construction of the glaze with which the surface is covered. The relation of body to glaze is if immense importance, and it is literally true that an unsuitable glaze would completely ruin the porcelain body to which it is applied. On the other hand, a properly constituted glaze, suited to the individual body concerned, would produce a much stronger combination than the unglazed porcelain. Glazee may be of many different shades and colours, which

are obtained by the introduction of stains, composed of various metallic oxides, the stain frequently being mixed, calcined and reground before incorporation the glaze batch. A close watch has to be kept on such composi-tions, in order that the proper tions, in order that the proper balance between glaze and body be not disturbed. Modern manufacturing technique is to apply the glaze to the fabricated article in the clay state and to mature both the body and the glaze in a single firing operation. Thereby a b ter bond is ensured between the oody and the glaze than was obtained by the older practice of fir-ing first the unglazed material unglazed material and afterwards glazing it in another firing.

The petrological microscope, and later the electron microscope, have proved valuable aids to the study of both raw materials and the fired bodies and glazes. The crystal structure in a glaze matrix, which is characteristic of porcelain, can be clearly seen and much useful information has been obtained in that way. An important factor in determining the structure developed during the firing process is the particle size of the raw materiais. This quality must be under control and various devices, all based upon the rate of sedimentation of the material either in still water or in water flowing at a known velocity, are in use to furnish the necessary information.

In the firing process itself great advances have been made, and the use of gas for the higher temperatures and of electricity for those below 1,200 deg. C. has now largely superseded the older coal-fired kilns. The tunnel kiln in which the ware is moved continuously through a heated sone, while the hot products of combustion exhausted through the incoming goods, is now in general use. Gas an excellent fuel for this type of furnace when the temperatures required are in the region of 1,300 deg. C., and the heat going goods, passing through the controlled cooling zone, is used to preheat the air for combustion of the fuel. The whole process is thus both recuperative and regenera-tive. In a different design of tunnel kiln, electricity is successfully being used for temperatures up to about 1,200 deg. C.

The tunnel kiln has a further advantage over the intermittent type in that changes in firing temperature and time may be more easily and more quickly made. This lends itself to the selective treatment of different types of porcelain, so that small pleces, and those compositions which can be fired rapidly, can be dealt with by themselves, and so processed rapidly instead of being held back by the necessity of mixing them in the same kiln with other pieces which require more time to mature.

In the use of insulation there is a great diversity in the size and chape of patterns designed for various purposes. These in turn call for a variety of material compositions and manufacturing methods. Small and intricate shaped pieces, such as the accessories used in household lighting and power service, cookers and so on, are produced by pressing a fine grained powdered mixture in steel tools and afterwards firing it in a high-temperature kiin. Larger and



Jollying or spinning a high-tension disc insulator in a plaster-

(Turn to page 48.)





(Above): Safetygraph on operating a power press is previewed for foremen by the divisional superintendent before showing to operators. (Left): Wood hands provide a safe, positive method of adjusting pull-out guards.

Eliminating Punch-Press Accidents

Here are Simple, Effective Measures that make it Possible

The employees of the punch-press department of an overseas organization worked 66 presses, two and three shifts daily for the entire year of 1948 without any lost time or disabling injury!

This was the first time this had been accomplished in over 40 years. They repeated this record in 1949! How was this done? Were they lucky? Did the law of averages finally give them a break? We think not. We think their record was the result of a combination of hard work, clear thinking, modern engineering methods, and—above all—the development of the right attitude on the part of both employees and management.

MODERN power presses are valuable aids to production. They have been responsible for lightening work loads, cutting osts, and raising the standard of living.

But they are the scourge of the safety engineer's existence. Acci-dents on them usually have a high severity rate. They seem to defy the best efforts to guard the operator from injury.

After a severe punch-press in-jury, everyone in the department is upset. Before the investigation is completed all concerned are acquainted with the details. In addition to the suffering of the injured man, morale throughout the depart suffers department and production is affected.

Costs are usually more than for any other type of injury, involving broken dies, spoiled material.

doctor's fees, drugs, hospitalization, workmen's compensation, supervisor's time, and finally rehabilitation of the injured employee.

How can injuries from power presses be brought under con-trol? A successful method is described by Edward G. Holtz-man in "The Machinist." The 66 presses in the department he refers to, range from light to heavy duty and perform drawing, blank-ing, perforating, forming, and subsequent operations. Most subsequent operations. Most operate two shifts a day, and some of them operate three full

The majority of these presses are hand fed by premium worker. The presses are guarded with all types of accepted guards. workero But they were guarded with the types of guards for several

press injury involved a man?"

(Left): Guard adjustment is tested before handing over to operator. (Above): Unattached pull-out cord is pointed out to operator by safety committeeman.

years before 1948, the first nodisabling-injury year!

The change began early in January, 1948, when the superin-tendent of the punch-press departments appealed to the writer for help, saying: "You've done a let to reduce accidents in my divi-sion, but what else can we do? I've raised so much cain with my foremen that they bow their heads when I look at them. That didn't seem to help. I've guarded didn't seem to help. I've guarded every press you fellows suggested. We've tried to impress the foremen with the hazards involved, but it doesn't seem to sink in. Why only last month one of the setup men adjusted a punch-press pullout device too long and when operator started to feed machine he had the ends of his smashed off! watch these guys every minute; we've got to get out production."

"Steve," I told him, "we've been studying your problem and we've got to start at the source."

"What do you mean by that?" "Isn't it true that every punch-

"Any fool can figure that out, Ed.

"Well, if we agree on that, it would seem that we should start with the operator and concentrate on him.

When I had outlined the plan of attack to him. Steve called a meeting of all the foremen and setmen for the following morn-

"Fellows," he began, "I've called this meeting to-day to discuss how

we can reduce these punch-press I don't have to tell what these accidents mean—we've been over that. You know every press in the division has some sort of guard on it, but we're still having injuries. Ed for getting at them." Ed. has a plan

The first step in the plan was to send every punch-press operator to school. The instruction was to be with a series of 2x3ft. pic-tures of punch-press hazards. We went through this at the meeting that morning to get the re-action of the foremen and set-up men and to enlist their co-operation. They were all en-

One man liked the illustrations and the simple explanations of the correct method of operating. an-

(Turn to page 47.)





THE AUSTRALASIAN MANUFACTURER [Page 46, November 18, 1950.]

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H 8 1.1 2 PLATE BATTEN HOLDER



ALSO H 812 3 PLATE BATTEN HOLDER

J.J. HOELL

(Continued from page 45.)

other liked the humour, another the way the speaker's remarks are provided on the back of each picture so they can be used without the audience being aware of notes, and another the quiz included to test the effectiveness of the presentation.

As a result the Safetygraph was presented to all the operators in the department in groups of not more than 14 at one time. At each session, there was free discussion and questions. Some operators stated that they remembered now having been told much of this by their foremen or setup men but that it hadn't sunk in.

This training developed a new safety consciousness in the men. It was observed that operators would point out unsafe practices to each other.

SPOTLIGHT ON DANGER.

The next step in the Plan was the three-dimensional painting of all presses in the department. Presses were previously painted a uniform, dull grey, Instead of bringing out the danger spots, the effect was to merge danger sones with safe zones until they were indistinguishable.

In repainting, the body of each press was painted a light green with danger areas painted in orange. Walls and ceilings were repainted at the same time to improve seeing conditions and increase efficiency of existing light-

Ing equipment.

The older "camouflage" method of painting could be likened to a piano with keys of mahogany or wainut, the same shade as the case. Even the most brilliant pianist would have trouble play-

ing such a piano.

Some of the foremen objected at first to what they considered a "sissy" theory. We can't find one to-day who continues to scoff at the streen and orange painting.

GUARD ADJUSTMENT

Third step was to improve the method of checking guards. All guards are subject to failure as long as the human element has any factor in placing, adjusting, or removing them. Many different operations are required of the same punch press and consequently much re-adjustment of guards must take place.

Many safety experts are convinced that all guards should be made an integral part of the die. We believe in this theory 100 per cent. Where the difficulty arises is when a part must be fabricated that will not permit an integral guard. We use pull-out guards for these jobs and find that they can be operated with positive safety to the operator.

The pull-out guard operates with a device attached to the ram of a press and cords strapped to the operators' wrists. When the ram descends the operator's hands are pulled away from the point of operation.

However, it was mentioned earlier that an operator had his fingers amputated because the stroke of the guard had been imWHEN IT'S WELDING-AUSTRALIA'S BASIC INDUSTRIES LOOK TO LINCOLN



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	Drilling capacity	in steel	11 ins.
	Morse Taper in s	pindle	No. 3
	Distance between	n anindle	

- and column 12 ins.
 Traverse of spindle 7½ ins.
 Max. distance between

- Spindle Speeds: 120, 235, 395, 705
 r.p.m. or 80, 120, 160, 235, 270, 395, 465, 705
 r.p.m.
- Range of Power Feeds per revolution: .004, .008, .012 ins.
- tion: .004, .008, .012 ins.

 H.P. of motor: 1½. Net Weight: 850 lbs.



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PROGRESS" MODEL 5E

- Drilling capacity in steel 2 ins.
 Morse Taper in spindle ... No. 4
 Distance between spindle
- and column 13½ ins.
 Traverse of spindle 7½ ins.
 Max. distance between

- Spindle speeds: 51, 89, 112, 170, 195, 223, 295, 488, 738 r.p.m.
 Range of Power Feeds per revo
 - lution: .005, .010, .020 ins.

 H.P. of motor: 2½. Net weight: 1.680 lbs.

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properly adjusted. To prevent this type of accident we made wooden hands to serve as a guide in setting up.

First the wood hands are checked for size with the hands of the man who will operate the press to make sure that his hands are not larger. The setup man must then operate at least 10 pleces with the wood hands attached to the pull-outs before the machine is released to the operator. In addition, a machine repairman is specifically assigned on each shift to check each device before the oacoming shift takes over the presses.

Since this system was established there have been no injuries on presses guarded with the "pullout device.

SAFETY RECOMMENDATIONS.

The fourth step in the programme involved a follow-up to maintain the safety conaciousness that had been established. Foremen regularly were called into safety meetings for discussion of the safety campaign. Foremen closely watched all safety guards and press maintenance.

The hourly rated employee selection as safety committeeman in each department was a valuable aid. A safety check list report to the foreman was designed by the safety department. The safety committee man took one hour each week to investigate hazards in the department.

A copy of this report was sent to the safety department, which followed up each recommendation, During the first year there were approximately 200 recommendations and every one of them was adopted.

The campaign paid off when the Department won its first award for completing a year without a disabling injury. The department, in 1949, completed its second straight year without lost time or disabling injury. Experience has shown that even a punch-press department can achieve a good safety record if it will work for it. The results are well worth the effort.

Porcelain in Industry

(Continued from page 44.)

more symmetrically shaped pieces are made from plastic clay by several different methods. The oldest is an adaptation of the ancient potter's wheel on which are produced blank forms afterwards turned on manually operated or semi-automatic lathes. The very large pieces are made by pressing or spinning the clay by means of metal tools while the clay revolves in a plaster of paris model. The large pagoda-like pieces, which are used for the weather shields of transformer and awitchgear insulators, are produced in sections and then stuck together while in the plastic state and finally fired in high-temperature kilns to produce a homogencous mass throughout the section. Pieces up to 10 ff. or 12 ft. high and weighing about one ton er produced by this method.

During the manufacturing processes the porcelain bodies undergo appreciable contraction, a fact which has to be allowed for in the design and use of tools. This contraction may not be similar in different directions in the same piece, and also varies according to the method of manufacture. Where very fine tolerances must be observed, grinding of the fired piece with hard abrasives, such as silicon carbide, is necessary. In this way close accuracy can be

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- The Sharples Nozljector has all liquid contact parts of stainless steel construction . . . integral motor drive . . . shipment in 60 days!

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tion, transmission and distribution, electrical engineers have found other uses for porcelain and allied ceramic materials. Chief among them are refractory materials used in the construction of electric cooking and heating apparatus. The special characteritics required of refractory materials are that they shall be capable of withstanding rapid changes of temperature and that they shall retain good electrical insulation resistance at high temperatures. Compositions containing the mineral steatite, a hydrated silicate of magnesium, have been found of service in this capacity as the crystal system developed by heating a mixture of steatite and clay, in the right proportions, combines low thermal expansion with good insulating properties and high mechanical Industrial Diamonds
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strength. Zircon as an ingredient of porcelain bodies is also used in this field.

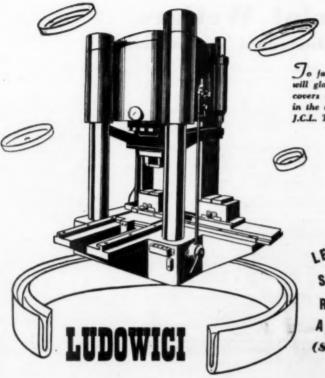
The development of the radio and electronic industries has led to a demand for a ceramic material possessing good electrical properties at the high frequencies used. Ceramics based on steatite fluxed by the addition of alkaline earth minerals have been found satisfactory for this purpose. In addition ceramics have come

In addition ceramics have come into use as dielectric materials for the construction of electrical condensers. For this purpose use is made of materials consisting almost entirely of titanum di-oxide or the titanates of the alkaline earth metals. These compositions provide dielectric properties which are not known in any other manufactured or natural material. Apart from the electrical indus-

Apart from the electrical industry porcelain finds further realms of utility in the chemical industry in contact with both acids and alkalis, and for piping, conduits and taps in positions where metals would suffer from chemical attack. Again because of its hardness and impermeable texture, it has been found suitable as a grinding agent in the preparation of paints, colours, fillers and for many purposes where it is required to reduce hard minerals to a fine state of division, either wet or dry. Porcelain, because of its hardness, which is higher than that of many metals, and the smoothness of its glazed surface also provides a suitable material for the construction of thread guides and other parts of textile machinery.

From the foregoing brief, but by no means exhaustive, survey, it will be seen that porcelain and kindred ceramic materials have a wide range of application in in-This range is constantly widening as new requirements arise and new materials are The ceramic chemist veloped. finds himself confronted with an immense field for exploration and the progress of geological survey is constantly adding to the assort-ment of minerals to be examined. Much work has been done on com pounds of the alkaline earth metals, calcium, barium, stron-tium and magnesium, whose pro-ducts, especially in conjunction ducts, especially in con with aluminium, titanium, conjunction zirconium, or beryllium, offer wide scope for research, to mention only a small section of the available field.

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Industrial Welfare

An Aid to Increased Production

No industry that has shown enterprise regarding matters which affect the human factor in industrial relationship has ever had cause to regret it. Provided the welfare schemes are fostered with faith and imagination, they prove to be highly successful tools of management.

THE most acceptable definition of industrial welfare is: A movement by industrial management to give systematic and consecutive attention and consideration to questions affecting the human factor in the industrial relationship. The emphasis is on "systematic" and "consecutive."

The popular conception of welfare is that it consists of buildings—institutes, clubs—recreation grounds and organizing socials. This conception is no longer adequate and is only regarded as a good introduction. It is difficult in any case to claim that such activities help production or that they benefit more than one employee in four.

Before embarking on such schemes, firms would do well to ask these questions:—

Is it desirable to segregate your employees for their leisure time? Are they not better left to find new companionships for their leisure among employees of other from? Can leisure time activities be imposed successfully from above?

It is seriously suggested by J. B. Longmuir, M.B.E., in "Metal Industry", that consideration of these questions will lead to the conclusion that industrial concerns will be well advised to encourage their employees to find an outlet for their leisure by service in voluntary organizations, or by taking the initiative in starting or participating in leisure-time activities in their own communities.

There is a further consideration. Since the end of the First World War, many Acts of Parliament have culminated in the Welfare State, and all industrial concerns would do well to co-operate with Government departments and local authorities before spending money in welfare buildings for leisure activities.

A final word of warning is that the cost of maintenance of institutes and recreation grounds is so excessive that the energies of management committees are absorbed in making ends meet, so that only rent-paying activities, e.g., billiards, are encouraged.

UTILIZATION OF EXISTING FACILITIES.

It is suggested that it is sound practice, as well as commonsense for firms to take full advantage of all existing welfare facilities.

Industrial welfare is not new. It has been practised in various industries for many generations. In fact, the services of the present Welfare State were pioneered by enterprising and benevolent employers, by private individuals and groups of individuals. The State has now only consolidated the work of these pioneers.

When it is realized that in Britain there are twenty-three national and local organizations available to develop further education and the encouragement of recreation and cultural interests and there are thirty-eight Government departments, local authorities and voluntary organizations responsible for giving some kind of social service to the industrial worker, it will be obvious how important it is that every industrial concern—who after all are making the money to provide these services—should make certain that they are getting their money's worth.

The extension of external as well as internal services on behalf of the industrial worker has been so rapid that it is difficult for industry to keep track of them all and the stage is now reached, it the maximum benefit on behalf of the worker is to be obtained from these services, when someone in the firm should be appointed—part-time or full-time—to act as the focal point and to ensure coordination. The title of this official does not matter but the fashion is to call him a personnel officer.

By such an appointment a firm ensures that the human needs of

everyone employed in the undertaking receive continuous and consecutive treatment. Consideration of the individual's problems has too often to take second place to urgent problems of daily production. In other words, too much time is spent patching-up trouble and too little in its prevention.

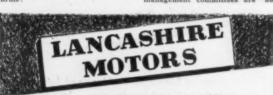
It should be made clear, however, that the personnel officer
does not come between the individual man and the foreman or
between the foreman and the
manager. His job is to help every
member of the executive line, i.e.,
every supervisor to lie his own
welfare or personnel officer, and
he should be regarded as an expert to whom to apply for help
or advice on behalf of an employee.

The aim and object of industrial welfare or personnel management is to secure maximum production by the most efficient use of available manpower, by securing the best possible conditions under which to work, and by ensuring fair play and even treatment for all employees. This can be summed up in two words "people matter."

Responsibility for this kind of industrial welfare lies with management and not with any outside body. It is management's job to see to it that all employees are given equal opportunity to develop the complete range of skills and abilities of which they are capable. The management of men is the supreme task of the manager and in this sphere he must be enterprising.

Absentee and labour turnover or labour wastage percentages are barometers to success or failure in this direction. They are the manager's vital statistics, his human profit and loss account, and they must get his, as well as the personnel officer's, attention.

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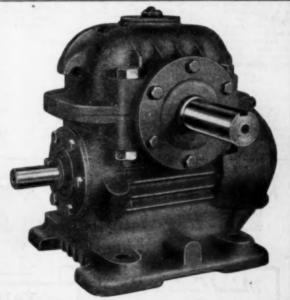
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conditions of work, for men are naturally conservative and if they leave one job for another it is serious and the cause must be investigated. Nine times out of ten it is management's fault and should be regarded as an affront A "post-mortem" should follow every case of a man leaving. This should be thorough and the real reason discovered and recorded.

reason discovered and recorded.

Labour wastage causes the following losses:—

Cost of training, informal as well as formal, is wasted when an employee leaves. 2. Production is reduced during learning period.
 Increased accident rate of new employees.
 Clerical work in connection with new engagements is wasted.
 Increased

wear and tear of plant and equipment by inexperienced workmen. 6. Increased output of spolled work. 7. The departure of a worker always has an unsettling effect on the workers who remain and reduces production.

Percentage absenteeiam is another useful measure of discontent or dissatisfaction with working conditions. Instead of blaming the absentee examine the conditions under which he has to work.

The serious financial loss due to excessive absenteeism is not always appreciated. This arises from the mistaken idea, held by both men and management, that as workers are not paid for time lost, it is their affair and they

are the only losers. This is a fallacy. Most overheads or oncost charges have to be met, whether the unit is working to full capacity or not.

The key to a partial solution of these twin problems of keeping men at work is in the growth and development of industrial welfare inside the unit.

DEVELOPMENT OF WEL-

The following is a brief outline of how industrial welfare should be developed in large and small concerns, or units:

Recruitment: Greater care in recruitment of all workers pays dividends. The ideal to be aimed at may be summed up in the words "entrance should not be too easy but once in, it should be regarded as a misfortune when a boy or a man wants to leave or has to leave."

Labour Turnover Statistics: It follows that every case of leaving or dismissal should be carefully investigated by someone other than the foreman or supervisor concerned. Labour turnover or wastage statistics for the establishment should be compiled. The real reasons for leaving should be classified and analysed so as to pin-point defects in selection, reception, treatment and working conditions. The wise manager who wants to keep his men will satisfy himself on the following questions:—Have working condi-

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tions been explained to him? Has he been properly introduced to his instructor and foreman? Has the initial training been satisfactory? Does he know the rules of the unit? Has he been made to feel important and that he matters? Has his interest in the work been aroused? Does he understand the organization? Has his travelling to work been discussed with him? Does he understand his possible earnings, the tions and methods of upgrading and promotion? Has he been told about the welfare facilities? Does he know to whom to apply if he is in trouble?

Personal Records: The next step is to ensure that Personal Record Cards are made out and that they are kept up to date by filling in as much information as possible as it occurs—upgrading, exceptional performances, suggestions, long illnesses, serious accidents and a summary of other absences, educational attainments, etc. Memories are not good enough when an individual's industrial pros-

pects are at stake.

Daily Attendance Graph: Keep a daily attendance graph showing on the top line the Wages Book strength, and on the bottom line the number actually at work. The gap between the number on the books and at work should be filled in showing absences, with leave, without leave, sickness, accidents and not known. Colour could be used to facilitate comparisons.

List Absentees: A list of names of all absentees, with reasons so far as are known, should be placed on the manager's desk or sent to foremen and it should be

sent to foreign and to securifized every morning.

It should be a regular practice to interview absentees on their return to ascertain the reason for absence or to offer sympathy with men who require it. Even in cases of absence without leave, the interview should be friendly and for the purpose of help, not by way of punishment or fault finding. If this interview is conducted in the right atmosphere, the real reason for the absence will emerge and many human problems will be uncovered. The solution to such problems and the ones revealed in the analysis of labour wastage will assist in trailoring the welfare services to the human requirements of the unit.

From actual experience, this regular and systematic interviewing of absentees is uphill and disheartening work. But practical men know that nothing worthwhile is easy of achievement, and that you only get out of a job what you put into it. At first it may only be possible to interview the youths, but gradually, as the numbers get less, all absentees can be interviewed.

Education and Training: For its industrial supremacy Britain is becoming more and more dependent on the skill of its craftsmen backed by the enterprise and administrative ability of manage-

The boy of to-day is the craftsman of to-morrow and if he is to be a factor in increasing production, he must receive attention from the moment he leaves school to start work.

Human beings are not born with manual or other skills; they only possess the capacity to develop a surprisingly wide range of skills. Definite steps must be taken, by systematic training and instruction, to bring out these skills and to arouse interest in work. In on field of industry is there greater scope for improving industrial efficiency and in increasing morale than by the proper attention to the training and welfare of young entrants.

Everyone is now agreed that the change-over from school to work is a difficult period and this tran-sition must be made easy. It would pay every industrial firm, no matter how small, to take steps to ensure that all applicants are not only carefully selected, but given a proper wel-come, which should include all the necessary information about the firm, its history, its products and the personnel who compose management. This them to settle down and develops a pride in their new company.

Where the number of young people warrants it, the most practical way for a firm to discharge its obligations to them is to ap-point an Apprentice Master or Supervisor who will act as their guide, philosopher and friend through the difficult days of through the difficult days of adolescence. Such a supervisor should be responsible for the should be responsible for the selection, training and giving ad-vice about evening and other classes and assist them to develop their personalities and characte by encouraging them to take full advantage of existing educational facilities and to play their part in community service. Periodic recommunity service. Periodic re-ports should be obtained from foremen. Victims of unfair treatment should be defended and transfers from department to department carried out fairly and in accordance with a recognized They should make certain that every youth knows the channel of promotion and how to get on in the service. The most vitalizing influence in any boy's life is a clear objective.

a clear objective.

It must be emphasized that every member of the management has some responsibility for the training and education of the youths who come under his control. It is surprising how many natural teachers can be found in industry. It is very good for members of the staff to have to teach the young. It develops their own personality as well as the knowledge of their job.

A by-product of a firm's training and education scheme using its own staff is that by developing mutual respect between management and the workpoople, it lays the foundation for goodwill and improved relationships.

As boys grow up they will continue to look to the firm's staff forhelp and guidance and it is then easy to extend influence to adult employees. No one can succeed in industrial welfare work without establishing the confidence of the



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PERSUASIVE LEADERSHIP.

The day of the "Press Gang" has gone, so have sanctions and fear of starvation. A new kind of leadership—persuasive leadership—is required which calls for the highest qualities, in character, personality and human understanding.

The foreman is in a key position and if he is to play his part in increasing production, up-todate methods should be used in his selection in the first instance; he should receive special training in human relationships and every encouragement to develop the complete range of the personal qualities required by the modern industrial leader.

There is no magic about this kind of industrial leadership, there is no royal road to it. It is the result of hard work, devotion to duty and by the development of human understanding.

One golden rule for any leader is to know as much about his men as possible by systematic study and to treat them as individuals.

The most direct form of persuasive leadership is Joint Consultation. The benefit in increased production is difficult to assess but the productive time lost in attendance at meetings is time well spent, if confidence in management is thereby secured.

Consultation must not be restricted to the formal meetings, but should be practised at all times between all levels of management and workpeople on a wide range of subjects. One weakness of formal joint consultation is the difficulty of getting workpeople's representatives to pass information down to their constituents and of getting ideas up. Too often the deliberation of Consultative Committees are regarded. Improved technique in consultation is essential if success is to be assured.

The other weakness is to ensure that members of the management team—the supervisors and foremen, who do not attend the meetings—are kept in the picture. Nothing destroys a foreman's or a supervisor's prestige and morale more than to be told of a decision of management by one of his men. This must not be allowed to happen even if a special meeting of the foremen

has to be arranged at which promises made by management's representatives are explained.

It is the writer's view that the best channel for management information is down the management chain to foremen and charge hands. Every possible way, therefore, of putting foremen and supervisors in the picture must be tried and energetically pursued. It is not too much to say, that on a proper solution of the two difficulties described lies the success of joint consultation.

WORKSHOP AMENITIES.

Workpeople are affected by their environment and if workers' entrances are not as dignified and as well lit as the office entrance, they are not likely to be convinced that their services are highly valued.

Where inefficiency is manifest and advertised by untidy work-shops, offices and yards, and by the sight of good material running to waste in scrap heaps, it gives the workers a bad impression of the efficiency of management and does not encourage either economy in the use of materials or efficient work. There is an excellent opportunity to contribute officiency by giving an air of good management to all the buildings set aside for the use of employees, such as cloakrooms, lavatories, canteens and rest and games rooms.

A broken pane of glass should be repaired immediately; a missing tile replaced; and a frayed window cord renewed. Cleanliness in lavatories should be on the top line; a cracked wash basin or a broken seat creates a bad impression. Close attention to these minor maintenance problems is necessary if the men are to be influenced favourably and convinced that they matter. For the same reason, benefit schemes, outings, and other events arranged in conjunction with employees must be thorough and efficient.

Foreign observers, who see British justice in operation for the first time, are profoundly impressed by its strict impartiality. Would they be as impressed with our industrial justice?, the author asks. It is less than two centuries since the industrial revolution and there may not have been time to match our industrial justice with our social justice but we must catch up with quickened pace.

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If the good citizen can only be produced in a happy home, surely it is true that the good craftsman workman can only be produced in a happy industrial home, where he can be sure of sympathy he is in trouble, that he gets a square deal and is regarded as important, no matter what job he is doing.

Just as a gilded palace or mansion does not necessarily ensure a happy home, so a well equipped workshop with ideal working conditions does not necessarily stitute a happy workshop.

Although it has been proved that good physical conditions, bright surroundings, rest pauses and incentive systems are a great help in improving output, unless all members of the management-team work harmoniously together and in full co-operation with the men, the maximum output will not be secured. On the other hand poor physical working con-ditions with the right kind of in-spired leadership and harmonious relationships can secure remarkably high morale and increased output.

industrial firm. mall, that has set out to establish sound welfare work has regretted it; none that has out the work with faith and imagination has not prospered.

The most successful firms in this field of welfare have adopted it because they felt it was the right thing to do. It has of faith with them. It has been an act

They did not expect to profit by what they did but the welfare schemes described proved to be highly successful tools of manage-

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Ceramic Moulds

Present and Potential Uses of Various Types of Ceramic Materials as Permanent Moulds for Casting Metals

Ceramics can be briefly described as essentially natural materials of the earth which may be modelled, moulded, trowelled, cast, or otherwise fabricated into useful articles. They normally comprise different quantities of metallic oxides, but are chemically classed as "non-metals."

A MONG the ceramic products that are well known to foundrymen are refractory furnace components and crucibles for melting alloys of all types, sand moulds, and plaster composition moulds for investment casting. These particular products merit no more than passing mention in this article, since they have provided subject matter for many previously published works. However, it is believed that their proved usefulness has at least established the potentialities of ceramic mould materials in terms of the following properties:—

of the following properties:

1. High heat resistance combined with low thermal conductivity.

 Relatively great chemical incriness at temperatures required to melt a majority of commercial alloys.

3. Very good fabricational qualities which permit the manufacture of accurate moulds with comparatively few defects and related difficulties.

Generally speaking, these desirable properties have thus far been regarded as practical in the fabrication of temporary moulds, each of which could produce no more than a single casting. However, a number of foundrymen are known to have made use of permanent ceramic moulds, and Thomas A. Dickinson, writing in "The Foundry", believes that there is every reason to predict that many similar applications will be developed as the facts about modern

ceramic materials become generally known

ally known.

Principal types of ceramic materials, he says, can be identified and defined as:

1. Glass—comprising fused sand, quartz, and metallic-oxide compo-

2. Porcelain enamels—comprising mixtures of glass and clay compounds, which can be fused on metal surfaces to prevent corrosion and other undesirable chemical reactions.

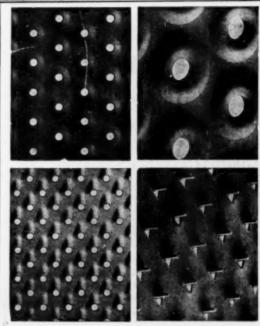
and other undestrate chemical reactions.

3. Clay products — comprising heat-fused clay or clay compounds such as pottery and structural brick.

4. Refractories—comprising mixtures of clays, gypsum cements, etc., which have probably the highest melting points of any group of materials now known to

Of these, glass materials appear to have the fewest probable applications in the fabrication of permanent moulds for casting metals—despite the proved usefulness of temporary sand moulds—since they will normally melt at comparatively low temperatures and have relatively low resistance to thermal shock. However, research workers have reported some success in the use of quartagiass moulds for the precisionatting of sinc, aluminium and other alloys in the intermediate temperature range.

For the latter experiments, moulds were of the open type and alloys were melted in the mould



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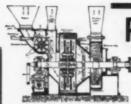
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cavities to minimize the danger of damage due to thermal stresses. Vitreosii was the quartz-glass composition used in making the moulds, and it was cast in the molten state over preheated refractory patterns. The moulds had a coefficient of thermal expansion of only 5.0 x 10.³ and expansion of only 5.0 x 10.³ and exclude as stated was capable of producing 10 to 25 identical castings without appreciable deterioration. The castings had exceedingly smooth and homogeneous surfaces, but were necessarily rather small and simple in design.

At overseas aircraft factories, porcelain-enamelled steel moulds are being used with some success for the casting of moderately large and symmetrical shapes with alloys in the low and intermediate temperature ranges. Sheet steel is first press-formed to produce a metal cavity by applying hydraulic pressure to a rubber "blanket" so that the rubber will sandwich the steel over a form block or pattern (made from cast plastics, low-melt alloys, etc.). Then the steel sheet cavity is cleaned or degreased, etched with an acid pickling bath, and coated with porcelain enamel as follows:

A ground or base coating (comprising porcelain enamel frit mixed with adherence oxides and water) is sprayed on to the steel, dehydrated at temperatures of about 200 deg. F., and fused into the steel surfaces at a temperature of about 2500 deg. F.

A cover coating (comprising about 95 per cent. zirconia, mixed with clay and water) is sprayed over the ground coating, dehydrated as noted above, and fused at temperatures of 2,500 deg. F. or more into the ground coating.

A seal coating (which is essentially the same as the ground coating) is thinly applied over the cover coating, then dehydrated and heat-fused as noted above for the initial coating.

Sheet steel cavities, thus enamelled, may or may not be stiffened with a cast-alloy backing medium before they are coated and can resist temperatures up to about 1,500 deg. F., as necessary, to produce an indefinite number of castings without acquiring cracks or distortion. Stock for drawing the cavities usually comprises 18 to 20 gauge enamelling grade steel sheets. The enamelling compositions were initially developed for use in improving the heat resistance of jet-propulsion airplane parts.

It has been suggested that porcelain-enamelled sheet steel cavities, reinforced with cast-alloy backing materials, would be suitable as long-lived moulds for die casting; but, while a number of die casters are reportedly endeavouring to make use of such moulds at this writing, it seems evident that such work has not yet progressed beyond the trade-secrets stage.

To date, says the author, few (if any) western U.S. foundries have endeavoured to acquire the dring-kilns and other facilities required to heat-fuse lay and related types of ceramic materials into permanent casting moulds. However, a number of companies have found it possible to have such moulds made to order by specialized ceramic manufacturers at apparently-reasonable prices.

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Among the latter firms, two of them have both acknowledged successful efforts to make ceramic

(Turn to page 62.)

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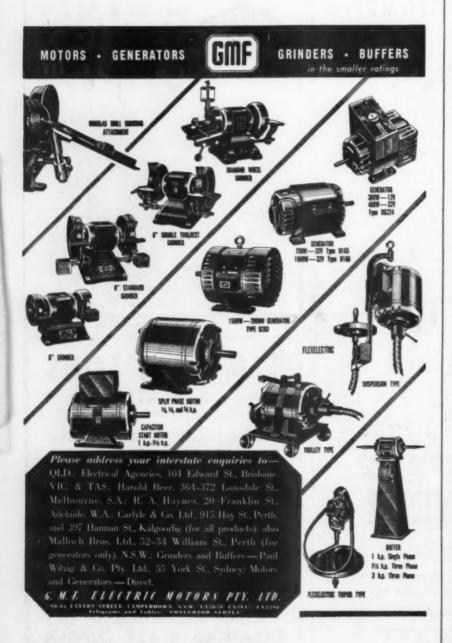
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Thomas: JA 4118, JA 4114.



(Continued from page 60.)

moulds in accordance with the following procedure:

 Patterns are made or modelled from a porous casting plaster compound in accordance with standard patternmaking procedure.

2. If the pattern has undercuts or contours which require the fabrication of moulds in two or more pieces, a separate pattern may be used for each mould piece, or areas of a single pattern may be progressively masked so that pieces can be cast thereon in appropriately dimensioned wood flasks. Otherwise, open-type moulds are Ilask-cast on a pattern with heat-resistant clay "slip" (i.e., a clay and water casting mix).

3. Clay-slip casts are dehydrated as cavicy snells, clinging to the plaster cavities. Dehydration in this case is accomplished in open air at room temperature by the withdrawal of water from the clay slip through the pores of the plaster patterns.

4 Cavity shells are reinforced with a coarse refractory backing material. Backing materials of this type are mixed with water then cast and allowed to set like concrete at room temperature, after which they will develop ceramic bonds at elevated temperatures.

5. Reinforced cavity units are fired at temperatures of about 1.500 to 2.000 deg. F. to fuse ceramic constituents.

6. Cavity surfaces are glazed for smoothness by applying, drying, and firing ceramic coating materials—much the same as metal surfaces are porcelain enamelled. A single glaze coating will reduce surface porosity enough for most casting purposes, but two glaze coatings are applied when a high-gloss tinish is desired.

Permanent moulds made according to the foregoing procedure may have most of the design features of sand moulds, if necessary, and can withstand the temperatures required to cast many types of iron and steel as well as alloys in the lower-temperature ranges.

in the lower-temperature ranges. Refractory materials of the types used in investment casting are not normally adaptable for use in permanent mould casting, since their composition is such that they can be readily damaged. However, there are a number of castable refractories which do not suffer from the latter disadvantage.

For example, in one plant planter compositions have been used to make open type permanent moulds for casting alloys at temperatures of 500 to 1,000 deg. F. The mould materials in this case are mechanically mixed with warm water for creamy consistency, and have been satisfactorily cast on plaster patterns when the latter were carefully coated with hospital green liquid soap. Resultant defects due to air bubbles were either minimized or eliminated by attacking the mould to a machine-vibrated surface so that air bubbles will be dissipated as it solidifies.

(Turn to page 68.)

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PATENT SPECIFICATIONS ACCEPTED

COATING IN ELECTROSTATIC FIELDS. 138,236.—H. J. Ransburg, H. G.

Ransburg, H. P. Ransburg and E. M. Ransburg. laim 1. A method of coat Claim 1. articles with a liquid coating ma-

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terial by spraying said coating material into an electrostatic field in which the article to be coated is located, characterized by introducing an auxiliary gas stream to control the direction or velocity of the particles of coating material prior to their electrostatic deposition

VELOCITY AND DIRECTION INDICATOR.

138,239,-Bendix Aviation Corp. Claim 1. Means for indicating the velocity and the direction of flow of a fluid medium comprising, a member, a body fixed to said member and rotatable with respect thereto by the flow of the fluid medium to assume an upstream direction with respect thereto, means in said member responsive to the rotation of said body for developing a signal in proportion to the rotation of said body by the fluid medium, means within said body for developing a signal proportional to the velocity of the fluid medium flowing thereover, and means at a remote point responsive to the signals of first and second means for indicating the velocity and direction of fluid flow.

Claim 7. A pitot tube transmitter assembly comprising, a hollow member, a self-synchronous transmitter within said member, having a rotor and a stator, a hollow streamlined body fixed to said ro-tor and adapted to be positioned

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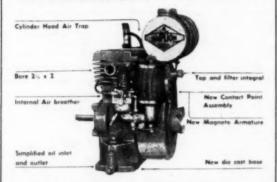
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in an upstream direction by the flow of a fluid medium thereover, impact and static pressure openings in said body, a pressure member within said body operable by the differential of impact and static pressures, and a transmitter operable by the expansion and contraction of the pressure member for developing a signal pro-portional to the velocity of the portional to the fluid over said body.

APPLE PARING AND CORING

138,240.-J. F. Lindner.

Claim 1. An apparatus of the kind described having a holder adapted to have an apple impaled

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thereon and rotated, said apparatus comprising means for peeling the apple while it is rotating, said including a knife, a rod rigidly extending therefrom, an actuating device for the rod adapted to swing the rod in an arc to cause the knife to travel along a side of the apple from its top to peel the same and to swing the rod back to its initial position at the end of the peeling operation, said actuating device including a guideway in which the rod is supported movement radially centre of said arc, resilient means urging the rod inwardly of guideway to cause the bear on the apple, and means for causing the rod to move outwardly of the guideway as it is swung back to its initial position so that the knife will clear the apple during such return swing of the rod, last-mentioned means comprising a swingable arm arranged transversely of the rod and having a slotted distal end engaged therewith, a member pivotally carrying the arm to enable it swing, and means for shifting this member to positionally advance the swingable arm at the end of the pecling operation whereby it is operative to cause the rod to deit in scribe an arc wide of the apple as it swings back to initial position.

HOLLOW BODIED FAUCET. 138,241.-Twentieth Century Valve Corp.

Claim 1. A valve having a hollow body with an inlet opening and an outlet opening and an internal





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shoulder arranged between the openings, an annular elastic valve seat member having a channel forming inner and outer annular flanges extending toward the inlet opening with the outer flange seating on the shoulder in a manner to expose the channel to the fluid pressure in the inlet opening, and a valve member conformably fitting the opening through the seat.

CORED SOLDER. 138,242.—British Insulated Callender's Cables Ltd.

Claim 1. A cored solder having the form of a wire and comprising an outer tube of solder metal and a core comprising a flux and solder metal in the proportions by weight of 25 per cent.-45 per cent. flux to 75 per cent.-55 per cent. solder metal, a proportion of the core consisting of a large number of minute pockets of metal filled with the flux and distributed throughout the core.

Claim 2. A method of manufac-turing a cored solder having the form of a wire by making a mixture of a flux and powdered solmetal in the proportions weight of 25 per cent.-45 per cent. flux to 75 per cent.-55 per cent. solder metal, the latter being dispersed throughout the flux and having a particle size of from 60 mesh to dust, not more than 5 per cent, of the particles being re-tained by a 30 mesh and not more than 5 per cent, passing through a mesh of 150, filling a tube of sol-der metal of larger diameter than required in the finished wire with the mixture of powdered solder metal and flux and drawing down the tube to form a wire and to cause a proportion of the larger particles of the powdered solder to join together by a cold-welding process and together with the aggregation of the smaller particles form a large number of minute pockets filled with flux and distributed throughout the core of the wire

SAFETY PIN PACKAGING APPARATUS. 138,244.—International Cellucotton

Products Co.

Claim 1. Apparatus for packaging safety pins, consisting in means for guiding a pair of tape strips into relatively superposed relation, and means for successively feeding safety pins into relatively spaced positions between such tape strips, at least one of such tape strips being provided with an adhesive coating for adhesively uniting the tape strips in face-to-face relation around the successively positioned pins.

SELF DEVELOPING FILM UNIT AND CAMERA. 138,243.—International Polaroid Corp.

Claim 1. A container for a photographic liquid for use in a film unit of the type adapted to have a liquid released therewithin as the result of relative movement between portions of said film unit and portions of a magazine, said container comprising means, including walls defining a cavity,

(Turn to page 68.)



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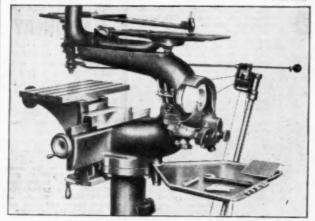
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(Continued from page 66.) for confining said liquid, said means having a portion thereof through which said liquid is adapted to be released and which is normally operative to assist in confining said liquid, a member associated with said portion and capacie of rendering said portion inoperative to confine said liquid when said member is moved relative to said portion of said container, whereby said liquid may be released through said portion.

Claim 4. A composite photographic product comprising at reast one layer of a sheet material naving an image area thereon, a container secured to said layer adjacent an edge of said image area, a liquid composition within said container, said liquid including at least a solvent for a developer capable of entering into a photographic process which produces an image on said image area, said container comprising means, including walls defining a cavity, for confining said liquid, at least a portion of said means being severable, a member associated with said container for severing said portion of said means when said member is moved with respect to said container and thus rendering said liquid.

Claim 24. A camera for use with film units of the type including several layers and a container for a photographic liquid having walls defining a cavity for confining said liquid. a severable portion of said container, a member extending from the interior of said container to the outside thereof, said member having a sufficiently high tensile strength with respect to the severance strength of said severable portion of said container as to be capable of severing said portion when said member is placed under a predetermined tension, said camera comprising means for housing such time units, means for engaging a portion of said member for cause severance of said portion, and means for spreading said liquid from said container in a uniform film between said liquid from said container in a uniform film between said layers.

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Ceramic Mouldings

(Continued from page 62.)

Setting of the plaster will usually take place in about 30 minutes, after which a pattern is removed from each mould cavity so that the latter can be dehydrated by heating to temperatures of about 450 or 500 deg. F. Silicone varnishes are sometimes used after the dehydration process to seal and increase the strength of cavity surfaces.

Castable refractories of the types used to line ultra-high temperature furnaces are often coarse in texture and exceedingly brittle; but, if handled with sufficient care, moulds made with such refractories might each be used to produce several iron or steel castings which are analogous to sand



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Whether moulds of this type are being used in casting metal pro-ducts cannot be authoritatively stated at this time. However, it is a rather well known fact that such tooling has been used in the production of glassware for many years; and that the conditions involved in casting glassware are very similar to the circumstances encountered in casting metals at temperatures of 1,500 deg. F. or less.

TENDERS FOR PATENTS

"IMPROVEMENTS IN OR RE-LATING TO POLARIZATION OF LIGHT.

Commonwealth Patent No. 105,335. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to these ends from persons and firms interested.

Address inquiries to SPRUSON & FERGUSON, Patent Attorneys, of 16-18 O'Con-nell Street, Sydney.

"IMPROVEMENTS IN OR RE-LATING TO APPARATUS FOR CASTING AND HANDLING BLOCKS."

Commonwealth P a t e n t No. 121,378. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

Address inquiries to
SPRUSON & FERGUSON,
Patent Attorneys, of 16-18 O'Connell Street, Sydney.

"IMPROVEMENTS IN OR RE-LATING TO FLUID CONTROL UNITS." Commonwealth Patent No.

Commonwealth Patent No. 124,649. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested. Address inquiries to SPRUSON, Patent Autoreeys, of 16-18 O'Constant Autoreeys, of 16-18 O

Patent Attorneys, of 16-18 O'Con-nell Street, Sydney.

The Proprietors of the following Australian Patent:— Patent No. 121,756, dated 10th May. 1944, in the name of STERLING ENGINEERING CO.

LTD., Essex, London, for an invention entitled: "Improvements in Connection with Firearms."

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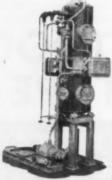
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Structural steel building frameing. £5,247. Arcos Products Pty.

Machine tools; screwing mach., £1,437. McPherson's Ltd.; 25-ton dleing mach., £3,185. Electronic industries. Phys. Ltd. horizontal dleing mach, £3,185. Electronic Industries Pty. Ltd.; horksontal boring and facing mach, £10,550. McPherson's Ltd.; 2in. bar capcapstan lathes and anciliary equip, two, £7,839. Alfred Herbert (Aust.) Py. Ltd.; 4 ft. 6 in. arm radial drilling machs., two, £3,840. Austin Quinn Pty. Ltd.; 11 in. eag-drilling machs., £2,495. Austin Quinn Pty. Ltd. Quinn Pty. Ltd.

Compensators and relays. voltage regulating equip., £8,003. Westinghouse Rosebery Pty. Ltd. Insulating oil, £33,385. Vacuum Oil Co. Pty. Ltd.

33,000 volt. single core cable, £3,564. Enfield Cables (Aust.) Pty.

Storage battery and battery charging equipment, £1,637 (sub-ject to variation). The Tudor Accumulator Co. Ltd.

P.S., £9,921. Will. William Adams

building. £1,606 Westinghouse. Rosebery Pty. Ltd.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD

Refrigeration plant, high pres-sure side, £32,716; low pressure side, £13,787. James Budge Pty. Ltd.; tube ice machine freezer unit, cap. 170 tons crushed ice, \$79,636. Henry Vogt Machine Co

Tungsten carbide bits, gamba dam, part, £714/11/8. G.B.S. Hard Metal Co.; £743/15/-. nwealth Steel Co.

pumping driven Electrically units, two, Upper Cordeaux pump-ing station No. 3, £16,574. Thompsons (Castlemaine) Ltd.

Heavy duty motorised jointer, ne. £211/7/6. Demco Machinery one, £211/7/6 Co. Pty. Ltd.

Concrete batching and mixing plant, city tunnel, £7,290. Gore

PUBLIC WORKS DEPART-MENT. H.W. and mixed water services

Gladesville mental h £4,550/10/-. Edward Stone. hospital, H.W. services, Bydalmere men-al hospital, £1,473. Edward

Low pressure refrigerating plant, City Morgue, 435. Refrigerator Installation and Service Co. Pty. £3,625. Chubbs Australian Ltd.

VICTORIA

STATE ELECTRICITY COM-MISSION.

Steel Pipes, for Tyers River Motor Supply (Spec. 49-50/373). Hume Steel Ltd., £64,065.

Fuel Oil Centrifuges, for Shepparton and Warrnambool Power Stations (Spec. 49-50/332). Gilbert Lodge & Co. Ltd.

Air Compressor (2). Atlas Diesel Stationary Air (Spec. 49-50/272). Co. Ltd., £37,383/16/-

Automotive and Tractor Lubri-49-50/242). cants (Spec. Caltex Canta (Spec. 19-50/2027. Cantal Oil Pty. Ltd., Shell Co. of A. Ltd., Vacuum Oil Co. Pty. Ltd., and H. C. Sleigh Ltd. Contract rates.

Hydraulic Presses, for Mainten-nce Workshops (Spec. 49-50/ 97). E. A. Machin Ltd., ance E. A. Machin Ltd., and Orton & Burns Pty. £234/3/-

L234/3/-, and Orton & Burns Pty. Ltd. £2.044.

Mild Steel Piping (Spec. 49-50/184). Hume Steel Ltd. £2,673.

Flanged Steel Pipes, for Yailourn Open Cuts (Spec. 49-50/140). Hume Steel Ltd., £2.887/10/-

Portable Air Compressors (Sp 49-50/124). McPhersons Pty. Ltd., £67,180/12/-, and Knox, Schlapp Pty. Ltd., £60,230.

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Distribution transformers, 500 kVA, 15, 2956 ca.; 1,000 kVA, 16, 1972 ca.; 1,000 kVA, nine, 2977 ca.; 1,000 kVA, four, £1,720 ca. English Electric

Cabie, bare copper, hard drawn, 7/.048, 15 tons, £3,612; 7/.064, 20 tons, £4,779; 7/.080, 40 tons, £9,520; 7/.014, 75 tons, £17,780; 19/.083, 75 tons, £17,920; 19/101, 25 tons, £5,973, plus 3.8d. per lb. surcharge. Australian General Electric Pty. Ltd.

Cupro nickel tubes, £831. William Adams & Co.

Chiorinators, £5,655. Water Softening Pty. Ltd.

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Pinions, 14 tooth, 259, 28/7/6
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mounted on two wheeled trailer
units with pneumatic tyres, £2,496.
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head, engineers', 6j im, "Nuttail"
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and 9 in. four jaw self-centring
chucks £236. Oueenjand Machi-

chucks, £736. Queensland Machinery Co. Ltd.

(Turn to page 72.)





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(Continued from page 70.)

Fork lift truck, Coventry Cli-max model FTD 412, £2,065, plus overhead safety guard, £25. U.K. overhead safety guard, £25.

SOUTH AUSTRALIA

S.A. RAILWAYS.

Motor trucks, £2,653. Motors Ltd. trucks, 5-ton, three,

Hydraulic tip trucks, pneumatic tyred, 5-ton, two, £2,652. Commercial Motor Vehicles Ltd.

Utility truck, car type, 12-15 cwt., £712. Waymouth Motor Co.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Machine tools, item 1, £149; item 2, £53; item 4, £12. Mc-Pherson's Ltd.; item, £40/17/6. Pherson's Lt Carlyle & Co.

Flanged sluice vaive, 36 in. dia., c.i., £739. Vanty Supply Co. Multitubular boilers, underfired, 14 ft. long by 6 ft. 6 in. dia., two, £7,966. Hoskins Engineering &

Foundry.

Sluice valve, "Morison & Bear-21," £248. R. P. McInerney. ny zi, 'Less. R. P. McInerney.
Lathes and accessories, item 1,
2126 ea.; item 2, £118; item 3,
£119 ea.; item 4, £126 ea. McPherson's Ltd.; items 1a, 2a, 3a, and
4a, £71/2/6 ea. Carlyle & Co.
Transformers, item 1, £190 stg.

ea.; item 2, £253 stg. ea. F. F. Electric: item 3, £485 ea.; item 4, 1654 ea. Brentford Transformers

Portable air compressor units, model 160, four, £1,415 ea. George

Jarrah piles, stringers, corbels Jarrah piles, stringers, corpers and bearers, item 1, 6/- per lin. ft.; item 2, 8/- per lin. ft.; item 3, 6/-per lin. ft.; item 4, 6/- per lin. ft. R. & N. Palmer. Concrete mixer, 21 cu. ft.

Concrete mixer, 11 cu. ft. "Lightning", £176. Harris, Scarfe & Sandovers. Garden seats, £4/10/- ea. Harris, Scarfe & Sandovers.

Winches, No. 2, "Biverside" vee groove friction type, two, £292 ea. Atkins (W.A.) Ltd.

Induction motors and star delta starters, item 1, £191 ea. Noyes Bros.; item 2, £36 ea. Barlow & Retailack.

Fan, "Sturtevant" design & Selentvane, size 521, item 1, 273. Flower, Davies & Johnson Ltd.;

item 2, £5/8/-. Atkins (W.A.) Ltd.

Elec. light and power instal., South Fremantle power station, £8,240. L. H. Deague & Co.

Stainless steel fittings, item 1, £46; item 2, £34; item 3, £28; item 4, £30 ea. H. L. Brisbane and Wunderlich

Centrifugal pumps, two-stage, 3 in., Stalker, £84. McPherson's

Alternator, Diesel driven, "Cross ley" vertical scavenge pump, Diesel engine, type HSL6, item 1, £12,495; item 2, £896; item 3, £688. Wm. Adams & Co.

Cooper cooling tanks, \$11/11/4 ea. Harris, Scarfe & Sandovers.

Water boring plant, Southern Cross No. 2, £927. Southern Cross Windmill & Engine Co.

Pressure pipes, r.c., item 1, 35/per ft.; item 2, 39/7 per ft.; item 5, 44/- per ft.; item 6, 26/3 per ft.; item 6, 25/per ft.; item 7, 26/3 per ft.; item 6, 25/per ft.; item 7, 26/3 per ft.; item 8, 27/2 per ft. Humes Ltd.
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Alternator set, 5 kVA, £365; switchboard, wall mounting, £47.

George Moss.

Refractory bricks and shapes, item 1, £2/16/- ea.; item 2, £1/18/6 ea.; item 4. £1/2/- ea.; item 5, 2/5 ea.; item 6, 7/- ea.; item 7, 7/- ea.; item 8, 1/9 per 100 cu. in.; item 9, 10, 11, £25/10/- per 1,000; item 12, 13, 22/10/- per 1,000; items 14, 15, 16, 242/10/- per 1,000; items 18, 19, 242/10/- per 1,000; items 20, 21, £25/10/- per 1,000; item 22, £5 per ton, plus bags at 2/6 ea. Atkins (WA) Ltd.

Windmills and pump rods as rewindmins and pump rous as required during period ending June 30, 1951. Item 1, £30/10/- ea; item 2, £38 ea; item 3, £49/15/- ea; item 4, 10d. per ft.; item 5, 9d. per ft. Metters Ltd.

Proposition plant item 1, £97:

Pumping plant, item 1, £97; item 2, £18/18/-; item 3, £7/10/-. McPherson's Ltd.

Pumping plant, item 1, £157; item 2, £29; item 3, £6/12/6. Atkins (W.A.) Ltd.

Panel planing and thicknessing 18 in. x 8 in., £302. machine, 18 in. x Atkins (W.A.) Ltd.

TASMANIA

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MISCELLANEOUS. Sewer pipes and fittings, £8,063. Humes Ltd., for Burnie Municipal Council.



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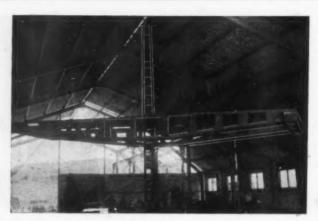
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CURRENT TENDERS

(Continued from page 89.)

STATE ELECTRICITY COM-MISSION

MISSION.
Evaporator, for Boiler Feed
Makeup (Spec. 250). Jan. 24.
Main Transformers, 132, 06, 22,
11 and 5.5 kV. (Spec. T/F.2). Dec.

Oil-Engine-driven Electrical Generating Plant (Spec. 240). Dec. 6. Oil Storage Tanks (Spec. 242).

Switchgear: (132, 66, 22, 11 & 5 KV), Relays and Carrier Current Communication Equipment (Spec. T.F./3). Extended to Jan.

Transformers, 3 phase and single phase (Spec. 241). Dec. 6. Turbo-Alternators (2) driven, 11,000 V., 18,000 kW (Spec.

T/F.1). Nov. 29.

Wood Burning Gas Producers
(Spec. 247). Dec. 20.

STATE WORKS DEPART-

MENT. Steel Frame Windows, for Men-tal Hospital, Charters Towers. Dec. 6.

MISCELLANEOUS. Fabricated Structural Steel Towers (Spec. 197/50), for Towns-ville Regional Electricity Board.

Plan Printing Machines, for Cairna Regional Electricity Board (Con. L50/21). Jan. 23. Quarry Plant, for City of

Quarry Plant, for City of Ipswich. Dec. 1. Switchgear, Relays and Instruswitchgear, heavys and instru-ments, for Cairns Regional Elec-tricity Board. Dec. 6. Switchgear, 22,000 and 6,600 volt., for Cairns Regional Electricity Board (Con. L.50/20). Dec. 13.

WEST AUSTRALIA

GOVERNMENT TENDER

BOARD.
Automatic Telephone Exchange (Sch. 529A). Dec. 14. Cast Manganese Steel Railway Crossings. Dec. 21.

Copper Conductors and Insulator Hardware (Sch. 570a). Nov. 23. Copper Conductors and Insula-tor Hardware (Sch. 570A). Nov.

Fire Fighting Equipment (Sch. 33a). Nov. 23. Mobile Crane, Wheel Mounted.

Wagon Equipment. Railway

Steam Raising Plant, for Col-lie Power Station. Dec. 14. Transformers—509 KVA and 750 KVA (Sch. 544a). Dec. 7.

Telephone Exchange, automatic.

Wheel Mounted Mobile Crane (Sch. 527A). Dec. 14.

TASMANIA

HYDRO-ELECTRIC COM-

MISSION Crusher Plant Foeders (C.E.-213). Nov. 22. Side-Tipping Mine Cars, Bran-by-Type, 4-cub. yd. cap. (12), (C.E. 221). Nov. 21.

(Turn to page 77.)

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IS EASIER TO LAY AND FINISH



DAREX AEA AT WORK

This Micro-Photo shows that when Darex AEA (Air Entraining Agent) is added to the concrete mix, CON-TROLLED AIR (3% to 5%) in the form of minute bubbles act as tiny ball-bearings to lubricate and plasticise the mix. Consequently, placing and finishing is easier and faster than ordinary concrete.

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CURRENT TENDERS - contd.

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HYDRO ELECTRIC DEPART-MENT.

MENT.

Auxiliary generating sets, 625 kVA., two (Con. 169). Pars., also Auckland, Christchurch, London, Paris, Washington, and Montreal. March 19

Filtration Plant at Tauranga Borough Council. Nov. 28. Outdoor Switchgear and Steel-

work, 50 kV (Con. 160). Nov. 28. Switchgear and steetwork, 110 kV. (Con. 167, 168). Specs. also Auckland, Christchurch. March 6.

Auckland, Christenurch. March e. Synohronous Condensers (2), 23,000 KVA. Nov. 21.

MINISTRY OF WORKS.
Cableways, radial, span 1,200 ft., continuous load 7½ tons, for accurate placing of concrete, etc.,

Whakamaru, two. Nov. 28.

Double drum steam winch; 5ton single acting steam piling hammer; steam boiler; 3 in. metallic steam hose. Pars., also Auck-land, Christchurch, Dunedin. Dec.

MISCELLANEOUS. Filtration Plant (Con. 126). Nov.

Late Open Tenders

COMMONWEALTH

DEPARTMENT OF SUPPLY. Calibrator Camera Nov. 23.

Gauges. Nov. 28.
Portable Air Compressors. Nov.

Switches, Pattern 4081A. Nov. 23

NEW SOUTH WALES

MISCELLANEOUS.

Portable Self-contained Air Compressors (8), of 200-300 c.f.m. cap., for Snowy Mountains Hydro-Electric Authority. Nov.

GOVERNMENT RAILWAYS

DEPARTMENT.
Automatic Ash Skip Hoist and
Horizontal Belt Ash Conveyors

(2), for Ultimo Power Station (Spec. 1272). Jan. 17. Station Watchmen's Clocks (CE-6200). Nov. 20.

DEPARTMENT OF SUPPLY. Aircraft Cylinders, Pistons, Fiston Bings, etc., Purchase of, from Randwick. Nov. 24. Aluminium Alloy Sheet. Nov.

28.
Aluminium Alloy Strip and
Sheet. Nov. 21.
Autoclaves. Nov. 24.
Electric Cable. Dec. 14.
Firebricks. Nov. 24.
Glycerine, 1,750 galls. Nov. 28.
Hand Tools (Hing Spanners,
Chisels, Screwdrivers, etc.). Nov.
24.

Khaki Worsted Ties, Light Grey Full Gloss Paint.

Paper Bags, Brown Paper, etc. Nov. 21

Scrap Metals, Purchase of, from Nov. 24. Copper Tubes, for Lift Sydney Sheet Copper Floats.

loats. Nov. 24. Skyrail Smoke Bombs. Nov. 21.

Skyraii Shoke Bohibs. Nov. 21.
Soap. Nov. 24.
Used Engine Oil, Purchase of,
from Balmain. Nov. 21.
Various Bags and Sacks, Purchase of, from Sydney. Nov. 21.
Waste Oil, Furchase of, from
Garden Island. Nov. 21.

DEPARTMENT OF PUBLIC WORKS.

Bolts and Nuts, Extended to Conductor Clamps. Nov. 22.

VICTORIA

DEPARTMENT OF PUBLIC

WORKS.
Central Heating System, for Infants' School, Darling East. Nov.

Hot-water Service, for Fuel Stove, for Orbost. Nov. 21. Kerosene Hot-water Service, for Hamilton. Nov. 21.

QUEENSLAND

MISCELLANEOUS. Power Grader, for Fitzroy Shire Council, Nov. 24. Latticed Steel Towers (2), for

66kV, Fitzroy River Crossing, for Capricornia Regional Board. Nov.

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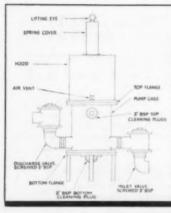


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	mp		84KX-2	These pumps are single acting and the capacity is
Capacit	valves, ins y, g.p.h.	500	1,000	about 40 delivery strokes per minute
Air p	ge head, pressure,	80	80	with thin grout, which should flow
		100	100	into the pump by gravity from
ins.		58	78	client's agitated hopper situated ad-
ins.		22	22	jacent to the inlet
ins.	length,	48	54	dimensions are

These pumps contain a Power-Eltor patent diaphragm assembly which, when supplied with compressed air.

expands and thereby displaces some of the grout from the pump case, the disphragm assembly then being contracted again by the main spring ready for

being contracted again by the main spring ready for the next atroke.

The cement inlet and discharge valves are of the latest pattern, having renewable and reversible rubber-faced discs operating on renewable hardened seats

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mounting on

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CURRENT TENDERS

NEW TENDERS

The following tenders have been called since our last issue. Current tenders which have been published in previous issues follow this section.

COMMONWEALTH

DEPARTMENT OF WORKS AND HOUSING.

Automatic Fire Alarm, for Automatic Telephone Exchange at outh Brisbane Nov. 28. Cabinet Refrigerator, 40 cub. ft.,

for Students' Hostel, Canberra Extended to Nov. 21. Coal Handling Plant, for Hei-

delberg. Dec. 19.
Counter Type Refrigerator, for Cadets' Block, R.M.C., Duntroon, A.C.T. Extended to Nov. 21.

Counter Type Refrigerator, for Students' Hostel, Forestry School, Extended to Nov. 21. Dust Extraction Ductwork, for

Heidelberg. Dec. 19. Electrical Passenger Lifts (4), and Electric Goods Lift, for Melbourne. Dec. 12.

Hot Water Service, for Portsea,

Kitchen Equipment (Spec. 356), for Central South Australia. Dec.

Mechanical and Hot Water In-stallations at Kapooka Immigration Holding Centre, Wagga. Nov.

Positive Displacement Pumps. for Parkville. Dec. 5.

Prime Movers and Low Load Floats to Departmental Store, Leichhardt. Dec. 5.

Refrigeration Plant, for Repat. Hospital, Greenslopes. Nov. 28. Salt Glazed Earthenware Pipes and Fittings, for various States.

Nov. 28. Steel Urinal Stalis Stainless (2), (Quot. 201). Nov. 23.

Steam Heated Hot Press, for Cadets' Block, Duntroon. Nov. 28.

STORES, SUPPLY AND TENDER BOARD.

Clocks, Office, small, with or without alarm (Sch. C.T.B. 917). Nov. 30.

Cotton Tape (Sch. C.T.B. 916). Dec 19.

Envelopes, for Dept. of Health (Sch. C.T.B.928). Nov. 23.

Metal Paper Fasteners and Bulidog Clips (Sch. C.T.B. 918). Dec.

Towelling (Sch. C.T.B. 919). Nov. 30

POSTMASTER-GENERAL'S DEPARTMENT.

Bedding (Sch. V.424). Dec. 5. Coil Winding Wire (Sch. C.-6531) Dec 19

Door Checks (Sch. C.6466). Dec. Drilling Machines (Sch. V.419).

Dry Cells and Batteries (Sch. Nov. 30. Packing Cases (Sch. V.420).

Nov. 21 Parcel Mail Opening Pads (Sch.

VA21). Nov. 21.

Relay Sets, Two Party Subscribers (Sch. C.6463). Dec. 5. Switches (Sch. C.6464). Nov.

Submarine Telephone Cable (Sch. C.6468). Jan. 18. Telephone Components (Sch. C.-

Dec. 5. es and Sockets (Second-Valves hand), (Sch. V.423). Nov. 28.

DEPARTMENT OF SUPPLY.

Standard Pantograph Engraving Machine, "Gorton Type U" or similar. Nov. 23.

NEW SOUTH WALES

METROPOLITAN WATER. SEWERAGE AND DRAINAGE BOARD.

Mild Steel Plate, approx. 2 tons of each size, in. in., in., in., in., and 1 in. (Quot. 8287). Dec. 11.

MARITIME SERVICE BOARD. Electric Welding Machine Portable), (Con. No. 50/51). Dec.

Marine Type Compression Igni-

Marine Type Compression Igni-tion Engine, for the Pilot Tender and Fire Float, Port Kembia (Con. 50/52). Dec. 4. Marine Type, Multitubular Boiler, approx. 10 ft. dia. x 10 ft. long (Con. 50/53). Jan. 2.

GOVERNMENT RAILWAYS DEPARTMENT.

Air Break Isolating Switches Manually Outdoor (241), Power Operated; current ratings, 300-1,200 amperes at voltages 33 k.v. to 132 k.v. (Spec. 1270). Extended to Dec. 13.

Bogie Louvred Vans (200), (Spec. 2211). Dec. 6. Coal Weighers, for Lake Mac-Coal Weighers, for Lake Mac-Louvred Vans (300),

quarie Power House (Spec. 1247). Extended to Nov. 29.

(Turn to page 79.)

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Stocks available at J. BLACKWOOD & SON LTD. 36 Sussex Street, Sydney, and SMITH & REID, Scott Street, Newcastle.

NEW TENDERS - Contd.

Polished Stainless Steel Sheets (CE-2385). Nov. 22. Wood Planing and Moulding Machine (CE-1704). Dec. 12.

DEPARTMENT OF PUBLIC WORKS.

Ash Bags, Nov. 22. Ash Bags. Nov. 22.
Bib Cocks. Nov. 22.
Bracket Light Fittings. Nov. 22.

Brake Lining Machine. Nov. 29 Calorifier. Nov. 22. Concrete Carrying Carts. Nov.

Connecting Rod Alignment Machine. Nov. 29. Copper Tubing. Nov. 22.

Cylinder Burnisher, Nov. 29. Diesel Engine Fuel Injection— Test Equipment. Nov. 24.

Domestic Hot Water, Central Hot Water Heating, Steam and Condensate Services, for Wollon-Condensate Services, for Wollongong District Hospital. Dec. 4. Electric Portable Drills. Nov.

Electrically Driven Pumping Plant, for Walcha Water Supply. January 22.

Electrically Operated Passenger Lift, for Wollongong District Hos-pital. Nov. 20. Flats, M.S. Extended to Nov.

Gas Heated Drying Cabinets. 22.

Nov. 72.
Gully Grates. Nov. 22.
Hot Water Urns. Nov. 22.
Iron Machine—Two Roll, for
Bathurst Teachers' College. Dec.

Jacketted Copper Pan. Nov. 22.
Laundry Machinery, for Bath-urst Teachers' College. Dec. 4.
Laundry Machinery, for Yass Hospital. Nov. 27.
Low - Pressure Refrigerating Plant, for Farrer Agricultural School. Dec. 4.

Low - Pressure Steam and Domestic Hot Water Systems, for Farrer Agricultural School. Nov.

Low-Pressure Steam and Domes-Low-Fressure Steam and Bounce-tic Hot-water Systems, for Farrer Memorial Agricultural High School, Nemingah. Dec. 4. Low - Pressure Refrigeration Plant, for Farrer Memorial Agri-cultural High School, Nemingah.

Steam Raising Low-Pressure Plant, Steam Hot-water and Heat ing Systems, for Yass District Hospital. Nov. 27.

Micrometers. Nov. 29. M.S. Channels. Extended to

Nov. 24.

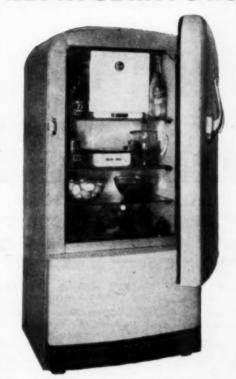
M.V.A. Transformers (2), 132/
66/11 K.V., 27.5, No. E.4/50151, for Southern Electricity Supply. Extended to Dec. 11.
Pedestal Grinder. Nov. 29.
Partials Contacting Machines.

Portable Grinding; Machines. Nov. 29 Pumping Plant, for Aistonville

Pumping Plant, for Aistonvine
Water Supply. Nov. 20.
Pumping Plant— Beep
Type, Electrically Driven, for
Cooma Water Supply. Dec. 13.
Pumping Plant— Bore Hole
Type, Electrically Driven, for
Mendooran Water Supply. Jan.

(Turn to page 80.)

SEALED UNIT REFRIGERATORS



MODEL S50, 71 CUBIC FEET CAPACITY With Modern and Exclusive CRISP CHEST and TRIPLE TEMPERATURE REFRIGERATION

Exclusive Crisp Chest for retaining the Vitamins and Flavour of your Food. Keeps Salads crisp. Prevents drying out. Keeps Butter and Cheese at spreading constituency. Automatic Interior Lighting. Enamel Interior.

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NEW TENDERS - Contd.

Ring Spanners. Nov. 29. Spark Plug Testing and Cleaning Stockpot. Nov. 24. Valve Lifters. Nov. 29. Machine.

MISCELLANEOUS

Diesel or Kerosene Powered Unit Mobile Cranes, for Snowy Mountain Hydro-Electricity Autherity. Nov. 20

Rotary Plough, powered with Diesel Engine, together with Auxiliary Equipment, mounted on suitable truck type Prime Mover, for Snowy Mountains Hydrofor Snowy Mountains | Electric Authority, Dec. 12.

Stninless Steel Sheathed Over-head Pilot Cable, for Newcastle City Council. Dec. 4.

Portable for Standard Cleaner Equipment, Mountains City Council. Dec. 4.

STATE CONTRACTS CONTROL BOARD.

Car Radio Sets, Purchase of. Nov 21

Chemical Balances, Purchase of. Nov. 22.

Combination Wardrobes, Tables. Nov. 21. Dress Material, Nov. 20.

Empty Bags, Purchase of Nov.

WHEN BUYING and SELLING

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Attendance Time Recorder

Just as materials are weighed and measured - so must hours and minutes be . . .

An International Time Recorder provides the means of mechanically measuring time.



INTERNATIONAL BUSINESS MACHINES PTY. LTD.

Hats, Buttons, Material and Clothing, Nov. 24. Horsehair, Purchase of, Nov.

Laundry Sheeting. Nov. 20. Maps. Nov. 21. Tiles. Nov. 20. Replating Electroplate. Nov. 23. Smoking Pipes. Nov. 20. Sponges, for Glass Finger Bowls. Nov. 22.

SYDNEY COUNTY COUNCIL. Miscellaneous Piping, for Turbo Alternators at Pyrmont "B"

Power Station (Spec. 1468). Extended to Jan. 18.

DEPAR'TMENT OF ROAD TRANSPORT AND TRAM-WAYS.

Hot-water Systems throughout the various sections of Bandwick Workshops, comprising the supply of sectional low-pressure steam bollers, oll burners, steam and cop-per pipe lines, cold and hot water tanks, heat 'exchangers, electric tanks, neat exchangers, electric hot-water storage tank, mixing valves, circulating pumps, bib-cocks, and all other auxiliary equipment. Nov. 23.

Underground Cable, Multicore Steel Wired Armoured Jute, served and impregnated, for Electromatic Traffic Signals (Spec. S.-573). Extended to Dec. 4.

+ SEE ALSO + + "LATE OPEN TENDERS"

DEPARTMENT OF MAIN ROADS. Spark Plug Cleaning and Test-ing Unit (Quot. 863). Nov. 21.

FORESTRY COMMISSION. Chemicals. Nov. 21.

VICTORIA

CITY OF MELBOURNE. Air Circuit Breakers and Current Transformers (Spec. 740/E). Extended to Dec. 14. GOVERNMENT RAILWAYS

DEPARTMENT Fog Signals. Dec. 6.

(Turn to page 82.)

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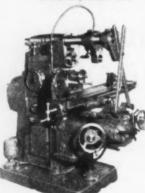
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Dec. 4

NEW TENDERS - Contd.

Gravel Ballast loaded into trucks at Stratford. Dec. 13. Hoists (or Pullers), 1½ ton, lever and rachet operated type. Nov.

Manilla Rope Blocks. Nov. 29. Portable Huts, 10 ft. x 8 ft. Dec.

Second-hand Machinery, Purchase of Nov. 22. Shaping Machines. Dec. 20.

POSTMASTER-GENERAL'S DEPARTMENT.

Bedding (Sch. V.424). Dec. 5. Parcel Mail Opening Pads (Sch. V.421).

421). Nov. 21. Second-hand Valves and Soc-ets, Purchase of (Sch. V.423). kets,

Miscellaneous Second-hand Material, Purchase of (Sch. V.427).

STATE ELECTRICITY COM-MISSION.

Heavy Duty Scrub Clearing Machine (Spec. 50-51/178). Dec. 20. Hot-water Systems, for Morwell Hostels (Spec. 50-51/182).

Telephone Cable Loading Coll Assemblies (Spec. 50-51/174). Jan.

MISCELLANEOUS.

Drum Emulsion Sprayer, power operated; Front-end Loader, 1 cub. yd. cap., for City of Ararat. Nov.

Transformer, Electric K.V.A., 22,000/415/246V., 3-phase, 50 cycle; or alternatively, Electric Transformer, 50 K.V.A., 22,000/415/

Transformer, 50 K.V.A., 22,000/415/ 240V., 3-phase, 50 cycle, for Shire of Wycheproof. Nov. 25. Spun Cast-Iron or Asbestos Ce-ment Pressure Pipes; Valves; Cast-Iron Specials, for Municipality of Fingal. Dec. 16.

MELBOURNE AND METRO-POLITAN TRAMWAYS BOARD.

Prefabricated Structural Steel Workshops Building (2), (Tender 1606). Nov. 27.

STATE RIVERS AND WATER SUPPLY COMMISSION.

Centrifugal Pumps (electric mo-tor driven), for Elidon. Nov. 28. Mobile 200 amp., D.C., Engine driven Arc Welding Set, for Bock-

lands Dam. Nov. 28.
Well Point De-watering Equipment, for Heyfield. Dec. 12.

PUBLIC WORKS DEPART-

MENT.
Hot-water Service, for Fuel
Stove, for Orbost. Nov. 21.
Kerosene Hot Water Service,

for Charlton, Nov. 21. Kerosene Hot Water Service, for Lake Boga. Nov. 21.

CITY OF MELBOURNE. Electric Passenger Lift and Electric Goods Lift, Supply of and removal of existing ones at Morton House (Spec. 744/E & 745/E).

QUEENSLAND

STATE STORES BOARD. Structural Steel, etc. Dec. 18.

IRRIGATION AND WATER SUPPLY COMMISSION.

Sanitary Air Compressors (2) only, 500 cu, ft, per minute. Dec.

BRISBANE CITY COUNCIL. Salt Glazed Ware Pipes and Fittings (Con. W79/1950). Dec.

MISCELLANEOUS. Corrugated Protected Met Sheeting (Sch. 200/50). Dec. 4. Metal

WEST AUSTRALIA

GOVERNMENT TENDER

BOARD.
Fishplates, for the Railways
Sch 608a). Dec. 21. (Sch ,608a). Hydro Extractor, for R.P.H. (Sch. 608a). Nov. 23.

CURRENT TENDERS

The following tenders have appeared in previous and are still current. previous issues

COMMONWEALTH

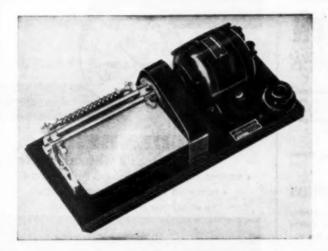
POSTMASTER-GENERAL'S

DEPARTMENT.
B.P.O. Standard Uniselector
Maintenance Parts (Sch. C.6426). Jan. 16.

Bimotional Switch Assemblies and Parts (Sch. C.-6436). Dec. 19.

Broadcasting Transmitters, Ra-dio Telephone (Sch. C.6435). Dec.

(Turn to page 83.)



"ADVANCE" LABEL GUMMING MACHINES

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Cleaner Labels

Increased Production

ADVANCE MACHINERY PTY. LTD.

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CURRENT TENDERS - contd.

Communication System between Sydney and Melbourne (Spec. C.-8157). Extended to Jan. 18, 1951. Electrical Indicating Meters (Sch. C.6421). Dec. 12.

Enamelled Signs (Sch. C.6459).

High Frequency Radio Tele-shone Subscribers' Equipment pnone Subscribers' Equipment (Sch. C.6435). Dec. 14.

Lead Seals (Sch. C.6460). Nov.

Machine Telegraph Equipment (Sch. C.6446). Dec. 5.

Machine Tools, for Postal Workshops (Sch. Q.109). Nov. 21.

Mechanics Tools, Gauges, etc. (Sch. C.6411). Nov. 23. Mechanics' Tools (Pliers and Serewdrivers), (Sch. C.6418). Nov.

Pliers and Screwdrivers (Sch. C.6418). Nov. 30. Packing Cases (Sch. V.420).

Protective A 6462). Jan. 23. Apparatus (Sch. C .-

Relay Strips and Mountings (Sch. C.6419). Dec. 7. Receivers and Parts (Sch. C.-296). Dec. 5.

Resistors and Reactances (Sch. C.6437). Dec. 19.

Solder (Sch. C.6458). Nov. 21. Spanners (Sch. C.6434). Dec. 19. Sub-Station Accessories (Sch. C .-

Sub-Station Accessories (Sch. C.-6420). Dec. 7.
Telesprinter Table and Silence Covers (Sch. C.6439). Nov. 28.
Television Installation at Sydney (Sch. C.6423). Nov. 21.
Tools-Adjusters and Benders (Sch. C.6429). Dec. 14.

Tools, for Mechanics, Exchange and Sub-station Maintenance and Sub-station 3 (Sch. C.6416). Nov. 30.

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Air Compressors (2), 600 C.F.M. (Spec. M29). Dec. 11. Galvanised Steel Cable Trays (Spec. E.30). Nov. 20. Grinding Media, 45 tons— Forged Steel Balls (No. M.30).

Rail Track Tippler, 140 deg. (alternatively 50 deg.), (Spec. M.-

Nov. 20. Driven, Direct Acting Steam Molten Pitch Pumps (three), (No. M.31). Dec. 18.

DEPARTMENT OF CIVIL

AVIATION.
Master Time Clock Systems and Associated Slave Equipment. Jan.

Tubular Steel Masts or Com-ponent Parts, for Rhombic Acrials (Sch. 314). Nov. 28.

DEPARTMENT OF SUPPLY Accumulators, Nov. 23.
Accumulators; Standard Pantograph Engraving Machine.

(Turn to page 84.)

ELECTRO-TIN PLATING

OUR Plating Department can quote you for your requirements in Electro-tin Plating of any desired thickness. Our modern equipment has a capacity of up to 88 square feet of plated surface and we specialise in the plating of tubing inside and out up to 29 feet in length. For further particulars and quotes, 'phone Mr. Yeomans, FW 2167.

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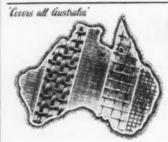
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MELBOURNE — ADELAIDE PERTH [Page 84. November 18, 1950.]





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CURRENT TENDERS - contd.

Aluminium Bar. Nov. 21. Aluminium Brass Tubing. Nov.

Automatic Telegraph Equip.

Nov. 30. Telegraph Equip-

Automatic 'ment. Nov. 30.

Motor Scythes; Boom Defence Equipment: Disinfectant, Disinfectant Paint and Powdered Lime. Nov 21

Motor Scythes. Nov. 21. Radio Plant and Equipment.

Trichlorethylene; Paving Paints; Transparent Adhesive Tape; Petrol Resisting Hose Tubing. Nov. 21.

DEPARTMENT OF WORKS AND HOUSING.

2 Plate Electric Stoves (1,000), or Canberra. Nov. 21.

r Canberra.
Air-conditioning Plant,
Telephone Woolloongabba Telephone Ex-change. Nov. 21.

Aluminium Screen and Doors,

for Administrative Building, Canberra, Supply and fix. Nov. 28.

Circular Beef Splitting Saw, Gambrel Cleaning Machine, and Grindstone, for Canberra Abattoirs. Nov. 21.

Tension Underground Cable and Joint Boxes, for Can-berra. Nov. 28. Indoor Ring Main Units, for

Electricity Supply, Canberra. Dec. Low Tension Underground Cable and Joint Boxes, for

28. Mattress Disinfector, for Princess Juliana Hospital, Turramurra.

Mechanical and Hot Water Installations, at Kapooka Immigration Holding Centre, Wagga. Nov.

Mild Steel Klosk Shells (6), for Electricity Supply, Canberra. Dec.

Oil Fired Multi-tubular Steam Boilers and Ancillary Equipment, for Princess Juliana Hospital, Turramurra. Nov. 21.

Outdoor High Tension Switch-gear, for Electricity Supply, Can-berra. Dec. 5. Steel Roller Shutters, Supply and fix, for Administrative Offices Weldlier, Carborna Vacco

Building, Canberra. Nov. 21. Stone Planing Machines (4), for Stone Yard, Canberra. Dec. 12.

GOVERNMENT RAILWAYS DEPARTMENT.

ended to Nov. Covered Goods Wagons. Extended

Mov. 21. ft. 6 in. Joseph Locomotives. Horizontal Boring Machine. Dec. 12.

Open Goods Waggons; Freight Car Rogies. Extended to Nov. 21. Sleeping Cars. Dec. 12. Tyres, for Rolling Stock. Nov.

STORES, SUPPLY AND TENDER BOARD.

Disinfectants (Sch. C.T.B. 915). Lead; Paint Oil; Varnish (Sch. C.T.B. 921). Nov. 23.

STATES

NEW SOUTH WALES

GOVERNMENT RAILWAYS

DEPARTMENT.
Axies, for Locomotives, Tenders and Carriages (Sch. 133).

Circulating Water Screening Plant, for Lake Macquarie Power Station (Spec. 1277). Dec. 20, (Turn to page 85.)

GENERAL **ENGINEERS**

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CURRENT TENDERS - contd.

Disconnecting Switches (Quot.

Disconnecting Switches (Quot. CE-1299). Nov. 23.

Four-wheel Brakevans (46), (Spec. 2207). Nov. 22.
Indicating and Recording Instruments, Summation and Remote Metering Protective Relays, Regulating and Bheostat Equip-ment, and Current Transformers, for Lake Macquarie Power Sta-

for Lake Macquarie Power Sta-tion (Spec. 1276). Dec. 13. Multi-cylinder Compression Ig-nition Oil Engines, flat type (17), approx. 259 B.H.P., at 1,800 R.P.M., and Hydraulic Torque Converters (Spec. 2212). Dec. 6. Overhead Wiring Equipment, for the Electrification of Ball-

ways Tracks. Jan. 24.
Riveted Steel Through Girder
Railway Bridges—3 90 ft. Span
(Spec. 515). Nov. 22.

Rolled Steel Tyres, for Locome Waggons (Sch. 131). Dec. 31.
Sawdust, Annual Contract (Sch. 146). Dec. 31.

Truck Weighbridges, 35-ton (16), with platforms 16 ft. long by 6 ft. 6 in. wide, equipped with dial indicators and recording heads.

DEPARTMENT OF PUBLIC WORKS.

Altitude Control Valves (2), for Bowraville and Nambucca Heads
Water Supply. Nov. 27.
Clamps (545). Nov. 29.
Echo Sounding Equipment

Echo Sounding Equipment (577). Nov. 24. Electric Lighting Plant, for Quirindi Aboriginal Station. Nov.

20.
Electrically-driven Bore, for Mendooran Water Supply. Jan. 15.
Exhaust Fan. Nov. 22.
Filtration Plant--600 G.P.H.

ios). Dec. 1. Filtration Plant. Dec. 1. Galvanised Water Piping (578).

Nov. 22. Pumping Plant, riven (Spec. 11 Electrically Driven (Spec. 117-49/50), for Aistonville Water Supply. Nov.

Lightning Arresters (448). Ex-

Lightning Arresters (448). Ex-tended to Nov. 29.
Lightning Arresters. Nov. 29.
Sink and Drainer, 8.S. (533),
Structural Steel (579). Dec. 1.
Structural Steel (589). Dec. 1.
Water Meters (4), for Beticulations, for Nambucca Heads Water
Supply. Nov. 27.

MARITIME SERVICES BOARD. Marine type Multi-tubular
Boller, approx. 10 ft. dia. x 10 ft.
long. (Con. 50/33). Jan. 2.
Steel Boller Shutters (12), for
new shed at Darling Harbour
(Con. 50/48). Dec. 4.
Structural Steelwork,
385.5 tons, for Shed at Pyrmont
(Con. 50/42). Jan. 8.

(Con. 50/42). Jan. 8.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Centrifugal-type Pumping Units, electrically-driven, for Bonnyrigg Pumping Station (Con. 2451). Dec.

Pneumatic-tyred Mobile Cranes (2), new or second-hand (P.T. 375). Nov. 28.

(Turn to page 86.)

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CURRENT TENDERS - contd.

Vertical Spindle Centrifugal-type Sewage Pumping Units, electric-ally driven, for low level Pumping Station, No. 119 (Con. 2965). Dec.

STATE CONTRACTS CONTROL BOARD.

Bale Boards and Purchase of. Nov. 21. Reel Ends.

Corrugated Cardboard

Corrugated Cardboard Containers. Nov. 21.
Letterpress Printing Ink, Tint
Inks, Bale Wrappers and Corrugated Cardboard Containers, for a period of 12 months. Nov. 21. Letterpress Printing Ink. Nov.

Monotype and Linotype Metal, Purchase of. Nov. 21. Scientific Apparatus. Nov. 23.

Spray Drying Plant. Nov. 28. SYDNEY MUNICIPAL COUNCIL. Petrol/Oil Driven Tractor. Nov.

SYDNEY COUNTY COUNCIL.

SYDNEY COUNTI.
Circuit Broaker Switching
Equipment, low voltage, air or
oli (Spec. 1456). Jan. 18.
Miscollaneous Piping, for Pyrmont "B" Power Station (Spec.
1468). Nov. 23.
Overhead Ash Handling Cranes,
Car Brusserage "B". Power Sciellen

for Bunnerong "B" Power Station (Spec. 1481). Nov. 23.

Supervisory Control Equip-ments, for City North Sub-station and City Sub-station (Spec. 1457).

Synchronous Motor Ope Time Switches (Spec. 1487). Operated

Turbine Blading, for Bunnerong
"A" Power Station (Spec. 1490)
Dec. 7.

MISCELLANEOUS.

MISCELLANEOUS.
Air Compressor and Accessories;
Tractor, with end-londer—1 yd.
cap; Tractor, with 'dozer blade;
centrifugal pump; Circular saw;
Mobile bitumen sprayer, for the
Municipality of Woollahra. Nov.

and Crates, Hydrogen hydrous Ammonia. Peroxide, Anhydrous Printed Bags and Wraps, Drums, Casks, Lubricating Oils, for Abattoir Dept. of Newcastle City Coun-Nov. 27. cil.

Diesel or Kerosene | Unit Mobile Cranes, for Snowy Mountain Hydro-Electricity thority, Nov. 20.

thority. Nov. 20.
Hard Drawn Bare Copper Cable;
-5 miles 7/064 H.D.B.C. Cable;
45 miles 7/080 H.D.B.C. Cable; 60 miles 7/.104 H.D.B.C. Cable. Cop-per Cable shall be in accordance with Australian Standard Specification No. C.41; 150,000 yards 7/.044 P.V.C. Aerial Cable. P.V.C. Cable shall be in accordance with Australian Standard Specification; Watthour Meters (Bakelite Cases) and M.D.L's-2,000 only Single-

(Turn to page 87.)

CURRENT TENDERS - contd.

phase, Two-wire 10/40 amp., 240V.; only Two-phase, 10/40 amp., 240V.; 1,000 only Three-phase, Four-wire 10/40 amp., 1nree-pnase, Four-wire 1040 amp, 240V.; 360 only 36 amp, M.D.I.; 260 only 60 amp. M.D.I.; 500 Street Light Fittings, 240V., complete with fuse box, hood, and E.S. holder, for Greater Wollongong City Council. Dec. 1.

Lead Covered Cables, for Tam-worth City Council. Nov. 25.

11,000-Metal-Clad Switchgear, 11,000-volt. and L. T., for Clarence Ri-ver County Council (Spec. 95/50). Dec. 20

Motor Patrol Grader, approx. 20,000 ib. weight, having drive, for Shire of Tomki. Dec. 7.
Outdoor Oil Circuit Breakers (11), \$3,000 volt., for Newcastle City Council. Extended to Nov.

Portable Diesel Engine Driven Compressor, Jackhammers, and Air Hoses, for Shire of Tweed.

Pumping Plant, deep-well type, electrically-driven, for Cooma Water Supply Augmentation (Spec. 120-49/50). Dec. 13.
Pumping Plant, electrically-

Pumping Plant, electrically driven Bore Hole Type, for Mendooran Water Supply (Spec. 114-49/50). Jan. 15. Switchboard, 11,000-volt., for Sutherland Shire Council. Nov.

Tractor, about 45-h.p., fitted with angle dozer, blade, cable, or hy-draulic controls; one Patrol Grader, 18,009-22,000 lb. tandem drive, der, 18,000-22,000 ib. tandem drive, full power controls, leaning front wheels; one Mobile Crane, capa-city 2 tons, capable of being readily converted as end loader; two 2-ton motor chassis, fitted with 3

ou yd tipping bodies, for Shire of Hornsby. Nov. 27. Venturi Meter, for Water Sup-ply Piping at Tomago (Con. 696). Hunter District Water Board. Dec. 12.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Galvanised Iron Sheets (Con. 1608). Nov. 29.

CITY OF MELBOURNE. Street Lighting Lanterns (Spec. 35/E). Dec. 4. 735/F) DEPARTMENT OF PUBLIC

WORKS. Sector Type Spillway Gates (8), 26 ft. x 23 ft., for Somerset Dam.

Nov. 27. GRAIN ELEVATORS BOARD. Overhead Crane Type Bunways, Structural Steel supplied. Nov. 27.

MELBOURNE HARBOUR TRUST COMMISSION. Mild Steel Reinforcing Rounds.

MELBOURNE AND METRO-POLITAN BOARD OF WORKS

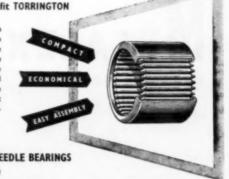
Compression Testing Machine, for Concrete, 100-ton. Nov. 21. Crawler Mounted Continuousbucket Excavator. Nov. 21.

Crawier Tractors (20), Class 1, 3 and 4, with Dozer Blades and Power Control Units. Nov. 21.

(Turn to page 88.)

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CURRENT TENDERS - contd.

Hexagonal Black Nuts, 150,000 in. and 100,000 in. dia., British Whitworth Standard B.S.S., 28/ 1932. Nov. 21

Hydraulically Operated Tilt and Angle Dozer Attachment to D.D.H.

Angle Dozer Attackments
Tractor. Dec. 19.
Overhead Air-operated Hoist
(Tender No. 1608). Nov. 20.
Portable Air Compressors (6). Dec. 19.

Portable Concrete Mixing Sets, (6), II cub. ft. Nov. 21. Tractor-type Front-end Loaders (6) Nov. 21.

MELBOURNE AND METRO-POLITAN TRAMWAYS

BOARD, Electrical Insulation Insulating Electrical Insulating Material (Sch. 51); Electrical Pittings and Sundries (Sch. 52); Electric Lamps (Sch. 55); Electric Wires, Cables and Flexible Cords (Sch. 55); Wires and Wirework Sun-dries (Sch. 57); Steel Wire Strand dries (Sch. 57); Steel Wire Strand Rope and Fittings, Link and Roller Chain (Sch. 58); Batteries and Spares—Lead Acid Type (Sch. 74); Rail Bonds (Sch. 75); Weld-ing Rods, Electrodes and Thermit Welding Materials (Sch. 76); Track Fastenings, etc. (Sch. 89); 89); Track Fastenings, etc. (Sch. 89); Mid Steel Plate Sheet, Hoop Tinned Plates (Sch. 84); Steel Reinforcement (Sch. 90); Industrial Gases (Sch. 91); Frames and Covers—Cast Iron and Steel (Sch. 92); Mild Steel Bar, Flat, Rounds, Squares, etc. (Sch. 108); Plywood Building Sheets (Sch. 113); Bitumen Emulsion, Pitch, Tar, Creosote and Bituminous Materials, etc. (Sch. 114); Castings. terials, etc. (Sch. 114); Castings, Iron and Steel (Sch. 114); Castings, Iron and Steel (Sch. 150), Supply of, for a period of 12 months. Nov. 20.

PUBLIC WORKS DEPART-

MENT.
Central Heating System. Nov.

STATE ELECTRICITY COM-

STATE ELECTRICITY COM-MISSION.

Bunker Discharge Dredgers and Brown Coal Bunkers (Spec. 50-51/148). Nov. 29.

Coal Crushing and Screening Plant (Spec. 50-51/153). Dec. 6. Cold Sawing Machines (Spec. 50-51/156). Nov. 22.

Copper Conductors and Trolley Wire. Nov. 20.

Wire. Nov. 29.
Dial-type Milling Machines
(Spec. 50-51/162). Nov. 29.
Horizontal Boring and Facing

Machine. Nov. 29. Lathes, for Maintenance Work-Lathes, for Maintenance Work-shops (Spec. 50-51/155). Nov. 22. Lathes, for Central Base Work-shops (Spec. 50-51/147). Nov. 22. Lathes, for Maintenance Work-shops (Spec. 50-51/173). Dec. 6.

Metal Plant Switchgear and Accessories, 20 KVA, 25 Cycles (Spec.

Mine Winders — Electrically Driven—3 ton (Spec. 50-51/75a). Nov. 22.

Paper and Varnished Cambrie Insulated Cable, Feb 7, Plate Girder Bridges (Spec. 50-51/116). Nov. 22.

Pneumatic Power Hammer (Spec. 50-51/163). Nov. 29. Portable Generating Sets (Spec.

50-51/150). Nov. 22. (Turn to page 89.)



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(except for an inspection at 2020 hrs.) During this test run the Flexivane received no attention or lubrication whatsoever. The only repair necessary after the inspection at 2020 hours was the gland seal, which was replaced at a cost of 1/3. The performance

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CURRENT TENDERS - contd.

Shaping and Slotting Machines (Spec 50-51/154). Nov. 22.

Teleprinter Machines (Spec. 50-51/119). Jan. 17.

Transformers and Spares (two), (Spec. 50-51/168). Feb.

STATE RIVERS AND WATER SUPPLY COMMISSION.

Hydraulic Scraper Hauler Unit, Concrete Vibrator U Petrol Driven, Nov. 21. Units (14),

Motor Truck Chassis, 5/6 ton

p. Nov. 21. Pneumatic Vibrators (6). Nov.

Road Tanker Motor Truck, 1,000

gallon cap. Nov. 21.
Water Tank, 1,000 gallon cap., supply and fit to 6-ton Motor Chassis. Nov. 21.

MISCELLANEOUS.

Internal Dia. Pressure Water Pipes—18 in., 15 in., 9 in., 6 in., 4 in., and 11 in. (Con. No. 234), for

Geelong Waterworks and Sewer-age Trust. Nov. 21.

Quarry Dumper Mechanism—
Assembled and mounted on Assembled and mounted on chassis provided. To suit existing skips; 60 H.P. Electric Motor skips; 60 H.P. Electric Motor— 3-Phase, 400 Volt., complete with starter; Tipping Truck—5 yard capacity, all steel body with hy-draulic hoist; 600 Gallon capacity Bitumen Boilers—Auto mounted trailer type and fitted with oil fires; Emulsion Spray—15 Gallon nres; Emuision Spray—45 Gallon capacity trailer type, with engine and compressor and spray bar; Power Grader—30-40 H.P., 10 ft. blade; Front End Loader—27-30 H.P., Pneumatic Tyred; Concrete Mixer—Pneumatic Tyred, Trailer type, I Bag capacity; Grubbing type, I mag capacity; cruoming Machine—Manually operated, with approximately 12 ton pull capacity; Mower-Drawn type, 5 Gang assembly, for the Shire of Frankston and Hastings. Nov. 24.

Road Roller (I.C. Engine) of 6

Road Roller (I.C. Engine) of 6 to 8 ton, Bitumen Sprayer, 80 gal. capacity, and Trailer Caravan, for Shire of Broadmeadows. Nov. 29. Trench Cutting Machine and Spare Parts; Portable Air Compressor Plant, complete with Accessories; Pressure Water Pipes,

4 in. and 14 in. Internal Dia., for Geelong Waterworks and age Trust. Nov. 21.

QUEENSLAND

BRISBANE CITY COUNCIL.

Lightning Arresters (Con. E.24/1950). Dec. 15.
Porcelain Insulators and Hard-

are (Con. E.25/1950). Jan. 12. DEPARTMENT OF PUBLIC WORKS.

Overhead Travelling Crane, hand-operated, 15-ton, for Hydro-Electric Power House, Somerset Dam. Dec. 18.

Refrigerating Plant, for Cold Room at H.M. Prison, Stone Ri-

ver. Nov. 22.
Spillway Gates (8), Sector Type, 20 ft. x 23 ft., for Semerset Dam. Nov. 27.

(Turn to page 75.)

DEPARTMENT OF RAILWAYS-NEW SOUTH WALES.

TENDERS enclosed in sealed envelopes which must be endorsed "TENDER FOR ..." addressed to the Commissioner for Railways, 19 York Street, Sydney, will be received on the date and time hower for services a pacified. shown for services specified.
Tenders may be lodged in the
Tender Box. Room 504A, 5th
Floor, Railway House, 19 York

shown for services specified. Tenders may be lodged in the Tender Box, Room 504A. Striper Street, Sydney, or posted to the Street, Sydney, or posted to the above address.

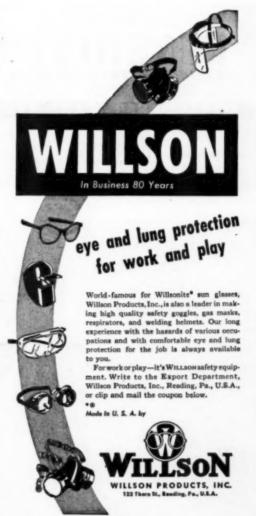
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